

EX-93213/ 93513/ 93713/ 93913

Panel PC User Manual

<u>Release Date</u>	<u>Revision</u>
June 2006	V0.2
Aug 2006	V0.3

®2005

All Rights Reserved.

Published in Taiwan

Warning!

This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, it may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

Electric Shock Hazard – Do not operate the machine with its back cover removed. There are dangerous high voltages inside.

Disclaimer

This information in this document is subject to change without notice.

Packing List

Accessories (as ticked) included in this package are:
☐ AC power cable
☐ Driver & manual CD disc
☐ Other. _____ (please specify)

Safety Precautions

Follow the messages below to prevent your systems from damage:

- ◆ Avoid your system from static electricity on all occasions.
- ◆ Prevent electric shock. Don't touch any components of this card when the card is power-on. Always disconnect power when the system is not in use.
- ◆ Disconnect power when you change any hardware devices. For instance, when you connect a jumper or install any cards, a surge of power may damage the electronic components or the whole system.

Table of Contents

Warning!.....	2
Disclaimer.....	2
Packing List.....	3
Safety Precautions.....	3

Chapter 1 **Getting Started**

1.1 Specifications.....	6
1.2 Dimensions.....	8
1.3 Installation of CD-ROM & HDD.....	12
1.4 Installation of PCI Addon.....	14
1.5 Brief Description.....	16
1.6 Panel Mounting.....	17

Chapter 2 **Hardware**

2.1 Mainboard.....	18
2.2 Installations.....	19
2.2.1 Installing CPU.....	19
2.2.2 Installing Memory.....	20
2.2.3 Installing Jumper.....	21
2.2.4 Connectors on Mainboard.....	25

Chapter 3 **BIOS Setup**

3.1 BIOS Setup.....	35
3.1.1 Standard CMOS Setup.....	37
3.1.2 Advanced BIOS Features.....	40
3.1.3 Advanced Chipset Features.....	43
3.1.4 Power Management Setup.....	49
3.1.5 PnP/PCI Configuration.....	51
3.1.6 PC Health Status.....	52
3.1.7 Load Fail-Safe-Defaults.....	52
3.1.8 Load Optimized Defaults.....	52
3.1.9 Set Supervisor Password.....	52
3.1.10 Save & Exit Setup.....	53
3.1.11 Exit without Saving.....	53

Chapter 4

Installation of Drivers

Intel Chipset Software Installation Utility.....	55
VGA Driver Installation.....	57
AC97 Codec Audio Driver Installation.....	58
LAN Drivers Installation.....	59

Chapter 5

Touch Screen Installation

5.1 Introduction to Controller Board.....	60
5.2 Windows Me/2000/XP USB Driver Installation for 5000 Boards.....	60
5.3 Linux X Window USB drivers Version 1.01 for 5000 Boards.....	74
5.4 Win CE USB Driver Installation for 5000 Boards.....	78

Figures

Figure 1.1: EX-93213 Dimensions.....	8
Figure 1.2: EX-93513 Dimensions.....	9
Figure 1.3: EX-93713 Dimensions.....	10
Figure 1.4: EX-93913 Dimensions.....	11
Figure 1.5: Front View	16
Figure 1.6: Rear View.....	16
Figure 1.7: Panel Mounting.....	17
Figure 2.1: Mainboard Overview.....	18
Figure 2.2 Installation of CPU.....	19
Figure 2.3 Installation of Memory Module.....	20
Figure 2.4 Location of Jumpers.....	21
Figure 2.5 Location of Connectors.....	25
Figure 5.1 Birdeye's View of Control Board.....	60

1.1 Specifications

Specs \ Model	EX-93213	EX-93513	EX-93713	EX-93913
CPU	Intel Celeron M 1.5 up to Intel Pentium M 1.8GHz			
Chipset	Intel 855GME			
Processor Side Bus Freq.	400MHz			
System Memory	DDR SDRAM supporting up to 1GB			
L2 Cache	1MB (CPU integrated)			
Display Size	12.1" 800x600 TFT LCD	15" 1024x768 TFT LCD	17" 1280x1024 TFT LCD	19" 1280x1024 TFT LCD
Maximum Colors	262K	16.2M	16.2M	16.2M
Viewing Angle (H/V)	120°/95°	140°/125°	140°/130°	140°/140°
Luminance (cd/m²)	300	400	300	250
Backlight Lifetime	50,000 Hours			
Rating	NEMA 4/IP65 certified Front Bezel			
Touch Screen Type	8-Wire Resistive (optional)			
Serial Port	2 x COM Port			
USB Port	4 x USB2.0 Port			
Parallel Port	1 x Parallel Port supporting SPP/EPP/ECP			
Drive Bays	1 x 2.5" HDD and 1 x Slim CD-ROM/DVD Combo			
Keyboard & Mouse	PS/2 Keyboard and Mouse Connectors			
Digital I/O	4 in/4 out (optional)			
BIOS	Award BIOS, ACPI Supported			
Watchdog Timer	Generates system reset, 256 levels			
LAN	1 x Ethernet (10/100MB)			
VGA	1 x external VGA			
Expansion Slot	2 x PCI Expansion Slot			
IDE Interface	Ultra DMA 33/66/100 + Built-in ICH4			
Audio	ICH4 Integrated Audio with AC97 Codec			
Power Supply	Universal AC 90~240V			
Construction and Color	Steel Chassis and Beige			
Dimensions (WxHxD)	390 x 265 x 111	410 x 310 x 111	457 x 355 x 123	484 x 400 x 139.5
Operating Temperature	0~50°C (32°F~122°F)			
Storage Temperature	-10°C~ 75°C (14°F~167°F)			

Relative Humidity	10~90% (non-condensing)
Vibration	5~17Hz, 0.1" double amplitude displacement 17~640Hz, 1.5G acceleration peak to peak
Shock	10G acceleration peak to peak (11 millimeters)

1.2 Dimensions

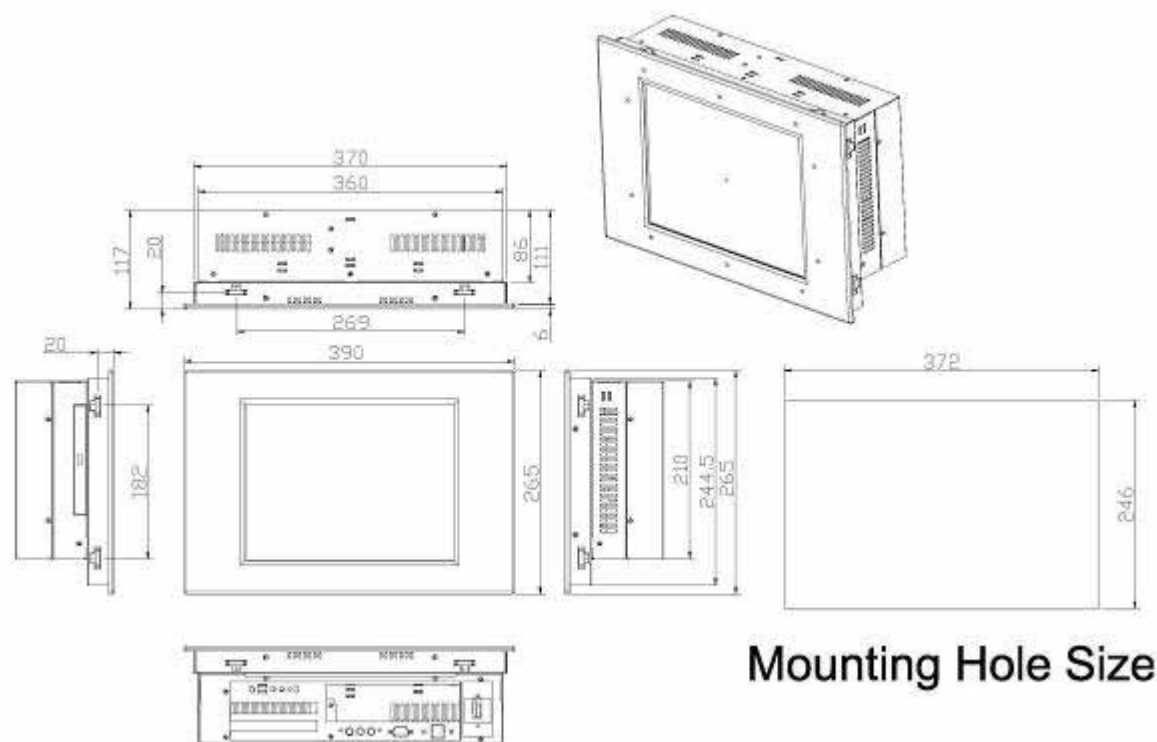


Figure 1.1: Dimensions of the EX-93213

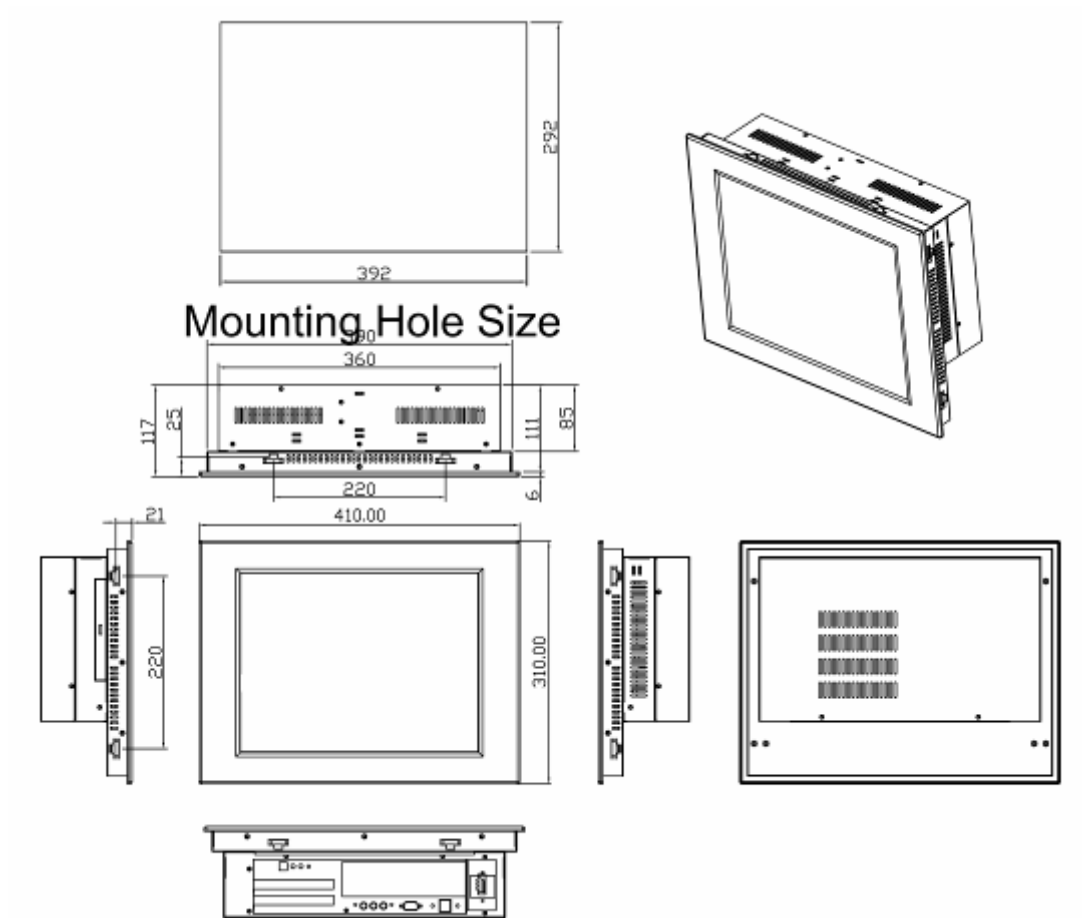


Figure 1.2: Dimensions of the EX-93513

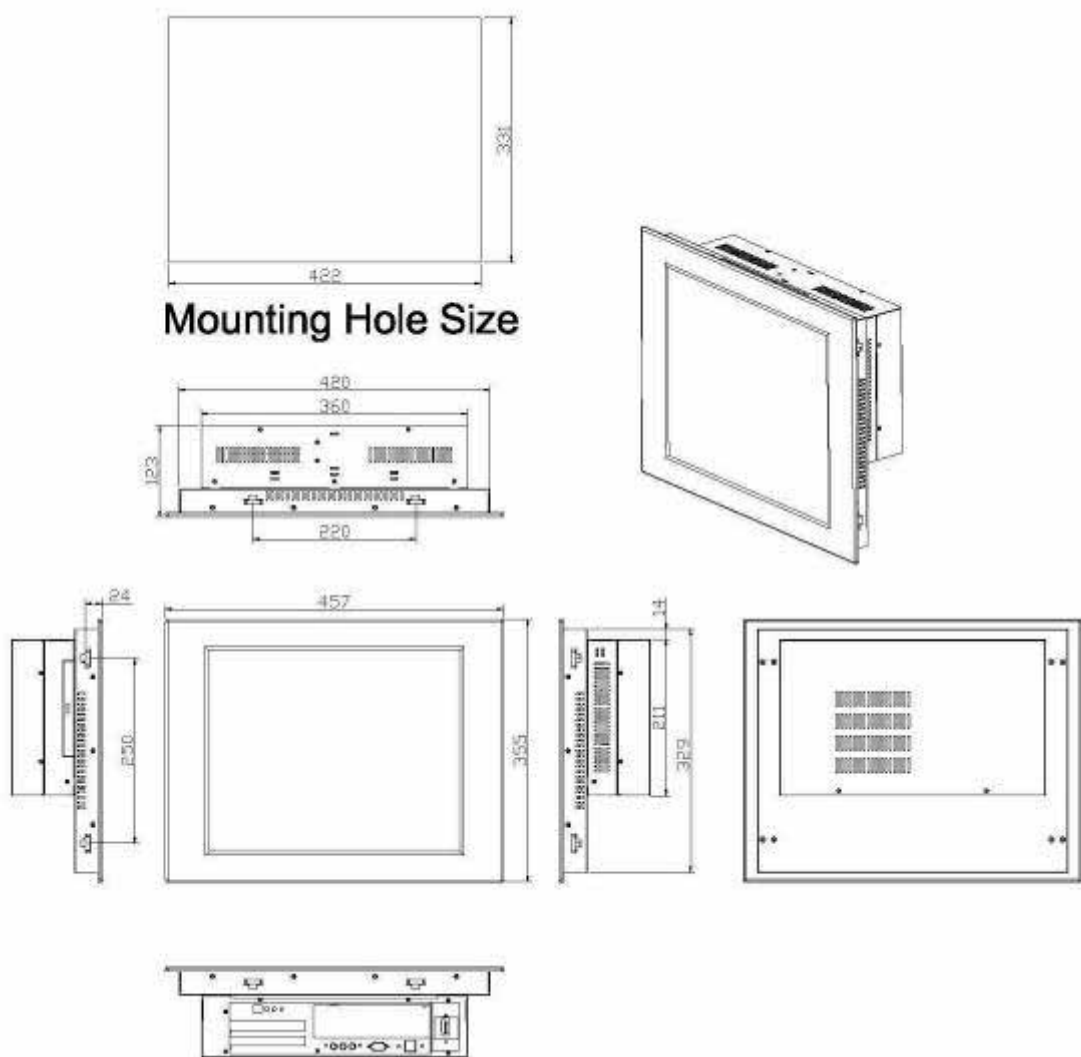
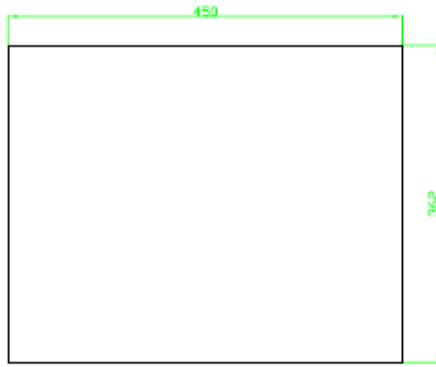


Figure 1.3: Dimensions of the EX-93713



Mounting hole size

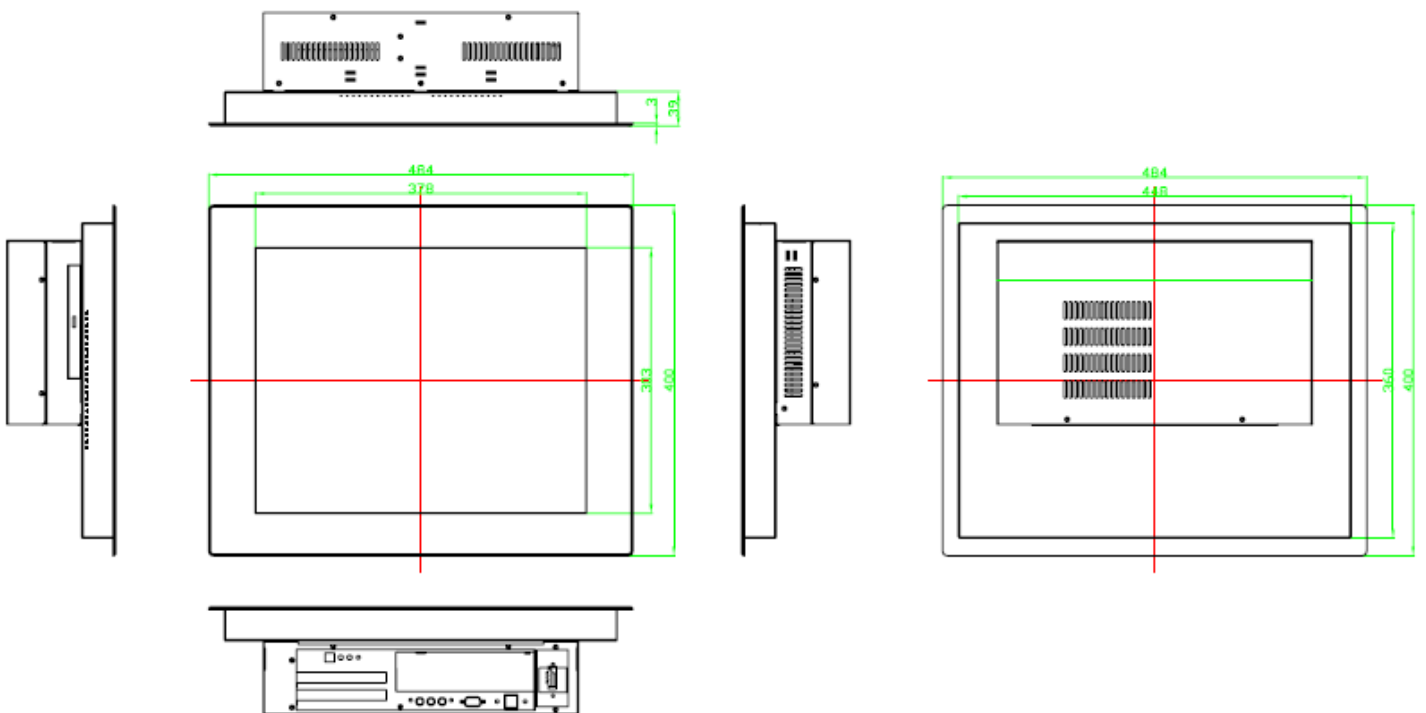


Figure 1.4: Dimensions of the EX-93913

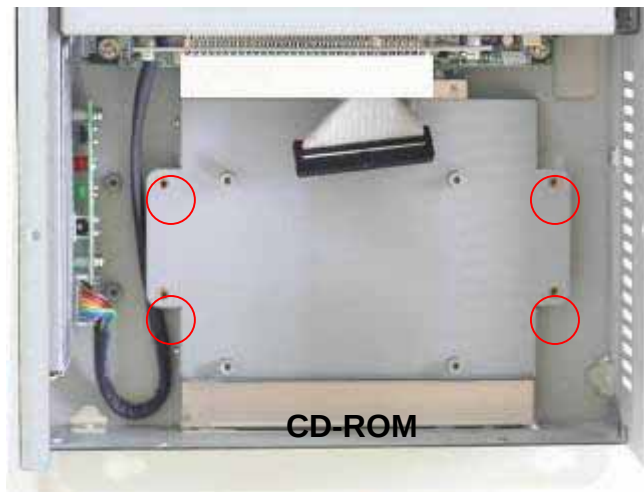
1.3 Installation of CD-ROM & HDD

There are 8 screws to deal with when enclosing or removing the chassis.

Both of 2 at the right side



Shown in the picture are the four screws (as circled in red) that tighten or loosen the bracket where the CD-ROM is placed underneath. On top of the bracket is where the HDD is placed. To remove the CD-ROM, the HDD has to be removed first.



Now slide the HDD into the bracket as shown in the picture. After that, connect the HDD to the 44-pin black IDE by means of the cable, making sure the red stripe of the cable is connected to the pin 1 of the connector of the HDD



The red circles shown in the picture are the screws that put the CD-ROM in place. The arrows shown are where the HDD, which is just placed on top of the CD-ROM, is tightened.



1.4 Installation of PCI Addon

Shown in the picture are the two PCI expansion slots as circled. They can be inserted with any addon for expanded functions.



Now slide the addon into the PCI slot, making sure the golden part faces the slot. When both parts that are interfaced together come into the right contact, slightly push the addon into the rail of the slot. This shows the addon is already completely connected.



After sliding the addon into the PCI expansion slot, get the two screws as circled tightened to finish the connection.



To finish the job, just fasten the 8 screws as shown in the picture.



1.5 Brief Description of the EX-93213/93513/93713/93913

The EX-93213/93513/93713/93913 is a rugged, compact and panel-mount industrial PC, which comes with a 12-inch (luminance of 300 cd/m²)/15-inch (luminance of 400 cd/m²)/17-inch (luminance of 300 cd/m²)/19-inch (luminance of 250 cd/m²) TFT LCD. It is powered by an Intel Celeron M 1.5GHz up to Pentium M 1.8GHz processor. The industrial panel PC also features two PCI expansion slots, two COM ports, six USB 2.0 ports, one 2.5" HDD, one slim CD-ROM/DVD Combo, Universal AC power of 90~240V, etc. It is ideal for use as a PC-based controller for Automotive, Logistic Process, Materials Handling, and Kiosk applications.



Figure 1.5: Front View of EX-93213/93513/93713/93913

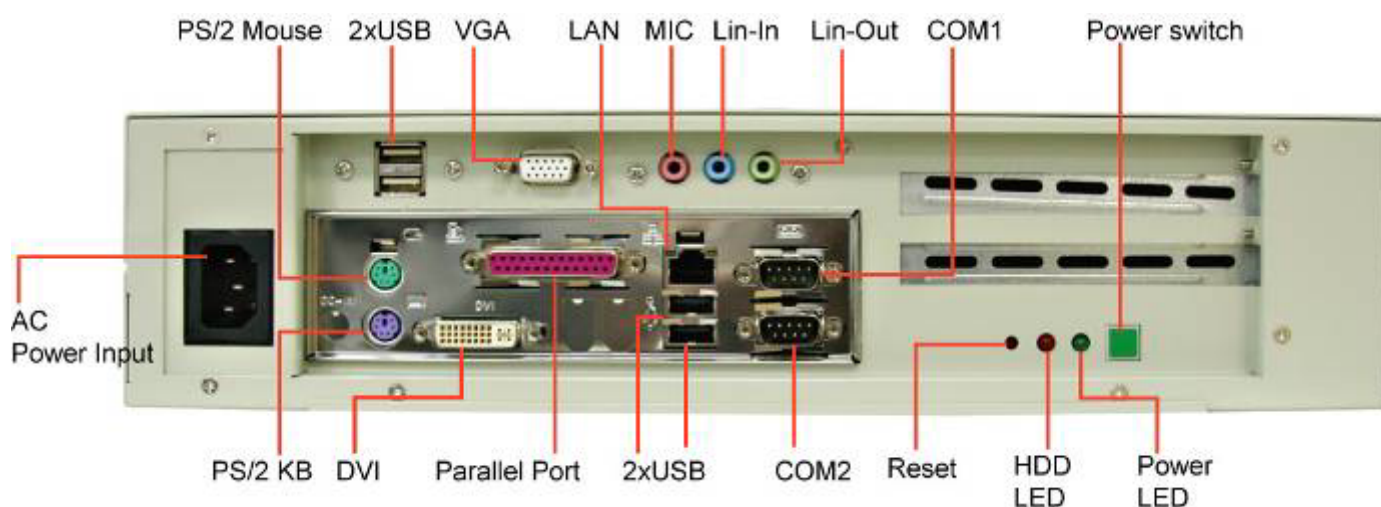


Figure 1.6: Rear View of EX-93213/93513/93713/93913

1.6 Panel Mounting of the EX-93213/93513/93713/93913

The EX-93213/93513/93713/93913 panel PC is designed to be panel-mounted as shown in Figure 1.6. Just carefully place the unit through the hole and tighten the given 8 screws from the rear to secure the mounting.

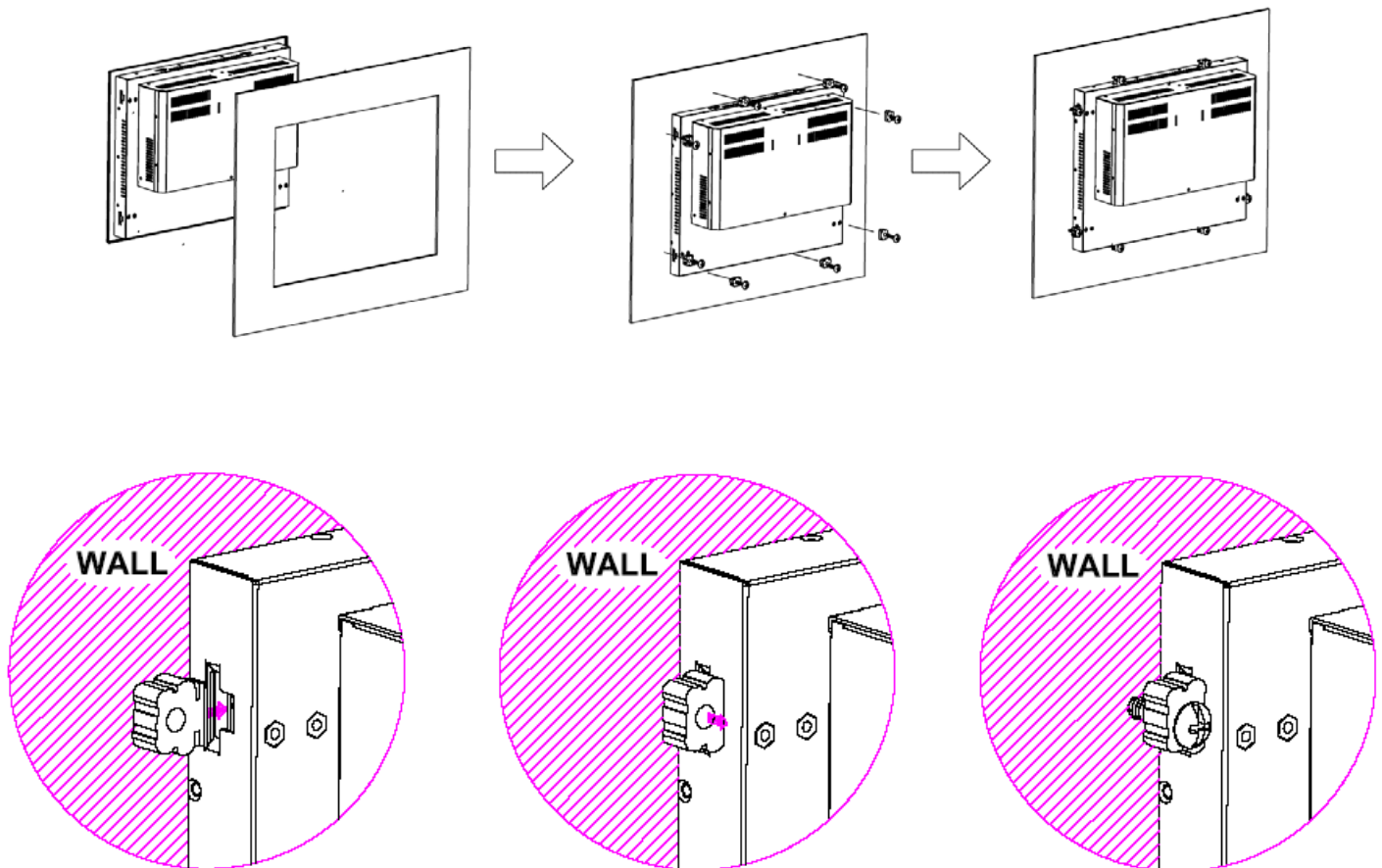


Figure 1.6: Panel mounting of the EX-93213/93513/93713/93913

2.1 Mainboard



2.2 Installations

This section provides information on how to use the jumpers and connectors on the mainboard in order to set up a workable system.

2.2.1 Installing the CPU

The mainboard supports a Socket 479 processor socket for Intel Pentium M or Celeron M processors. The processor socket comes with a screw to secure the processor. As shown in the left picture below, loosen the screw first before inserting the processor. Place the processor into the socket by making sure the notch on the corner of the CPU corresponds with the notch on the inside of the socket. Once the processor slides into the socket, fasten the screw.

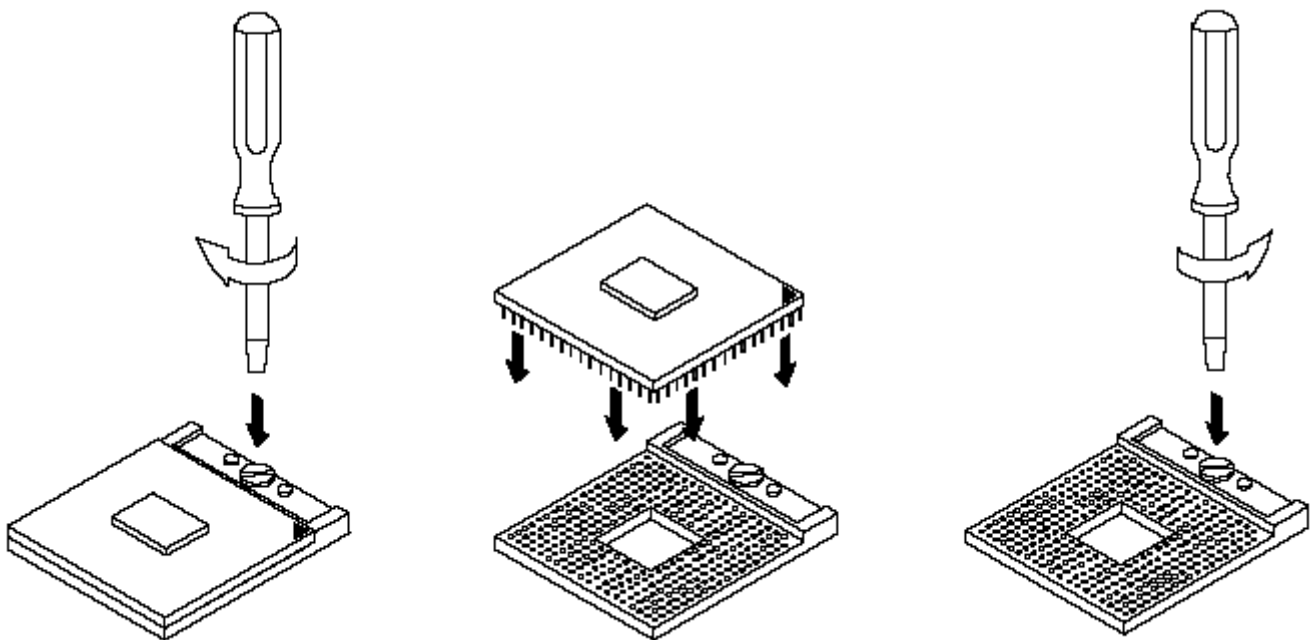


Figure 2.2: Installation of CPU

Note:

Make sure the heat sink and the top surface of the CPU are in total contact to avoid the overheating problem that would cause your system to hang or be unstable.

2.2.2 Installing the Memory

The mainboard supports one DDR memory socket for a maximum total memory of 1GB. The memory module capacities supported are 128MB, 256MB, 512MB and 1GB. The following figure shows the supported DDR DIMM configurations. The Intel 855GME supports configurations defined in the JEDEC DDR DIMM specifications only. Non-JEDEC standard DIMMs such as double-sided x16 DDR SDRAM DIMMs are not supported.

To install the DDR modules, locate the memory slot on the board and perform the following steps:

1. Hold the DDR module so that the key of the DDR module is aligned with those on the memory slot.
2. Gently insert the DDR module into the memory slot and lock the two levers in place.
3. To remove the DDR module, press the two levers with both hands.

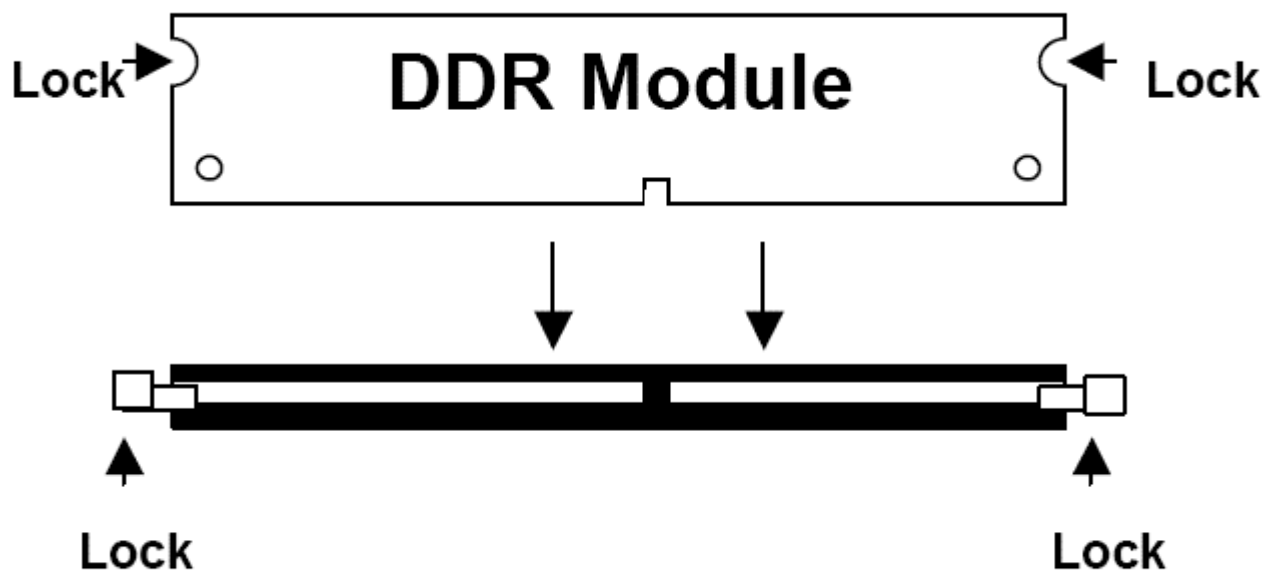


Figure 2.3: Installation of Memory Module

2.2.3 Installing the Jumpers

Jumpers are used on the mainboards to select various settings and features according to your needs and applications. The following lists the connectors on the mainboard and their respective function.

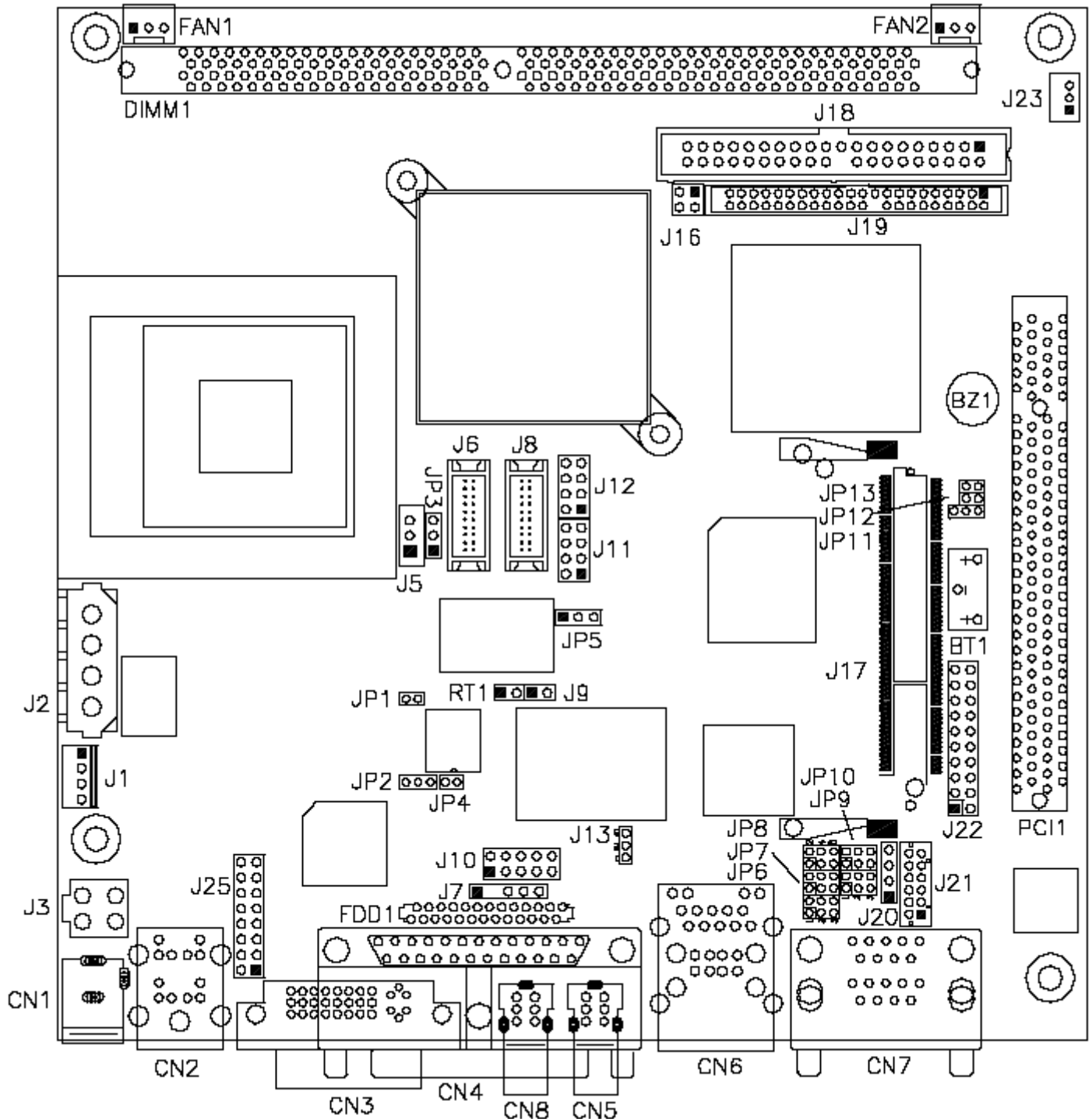
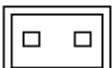
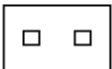
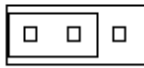
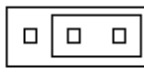


Figure 2.4: Location of Jumpers

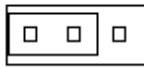
JP1: CPU Host Clock

SEL-0	SEL_1 (JP1)	SEL_2	Host Clock
1	 Short	0	100MHz (default)
1	 Open	0	133MHz

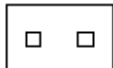
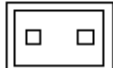
JP2: Power Mode Setting

JP2	Power Mode
 1 2 3	Simulate ATX Power Mode (default)
 1 2 3	AT Power Mode

JP3: LVDS Power Setting

JP3	LVDS Power
 1 2 3	+3.3V (default)
 1 2 3	+5V

JP4: 1394 Controller EEPROM Write Protect

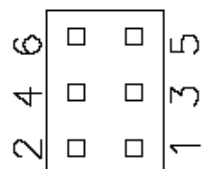
JP4	Function
 Open	Write Disable
 Short	Write Enabled

JP6, JP7, JP8: RS232/422/485 (COM2) Selection

COM1 is fixed for RS-232 use only.

COM2 is selectable for RS232, RS-422 and RS-485.

The following table describes the jumper settings for COM2 selection.



COM2 Function	RS-232	RS-422	RS-485
Jumper Setting (pin closed)	JP6: 3-5 & 4-6	JP6: 1-3 & 2-4	JP6: 1-3 & 2-4
	JP7: 3-5 & 4-6	JP7: 1-3 & 2-4	JP7: 1-3 & 2-4
	JP8: 1-2	JP8: 3-4	JP8: 5-6

JP9: COM2 RS232 Pin9 Setting

Pin #	Signal Name	JP9	Signal Name	Pin #
1	RI		+12V	2
3	RI (Default)		RI (Default)	4
5	RI		+5V	6

COM2 Settings: Pin 1-2 short = +12V, Pin 5-6 short = +5V, Pin 3-4 RI Signal (default)

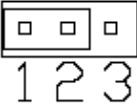
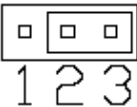
JP10: COM1 RS232 Pin9 Setting

Pin #	Signal Name	JP10	Signal Name	Pin #
1	RI		+12V	2
3	RI (Default)		RI (Default)	4
5	RI		+5V	6

COM1 Settings: Pin 1-2 short = +12V, Pin 5-6 short = +5V, Pin 3-4 RI Signal

JP11: Clear CMOS Contents

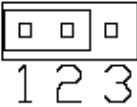
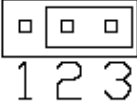
Use JP11 to clear the CMOS contents. *Note that the ATX-power connector should be disconnected from the board before clearing CMOS.*

JP11	Setting	Function
 1 2 3	Pin 1-2 Short/Closed	Normal
 1 2 3	Pin 2-3 Short/Closed	Clear CMOS

JP13: Compact Flash Mode Setting

JP13	CF Mode
 Open	Slave
 Short	Master

J13: Intel® 82541GI Gigabit LAN Enable/Disable

J13	Gigabit LAN
 1 2 3	Enable
 1 2 3	Disable

2.2.4 Connectors on the Mainboard

The connectors on the mainboard allows you to connect external devices, such as keyboard, floppy disk drives, hard disk drives, printers, etc. the following table lists the connectors on the MB890 and their respective functions

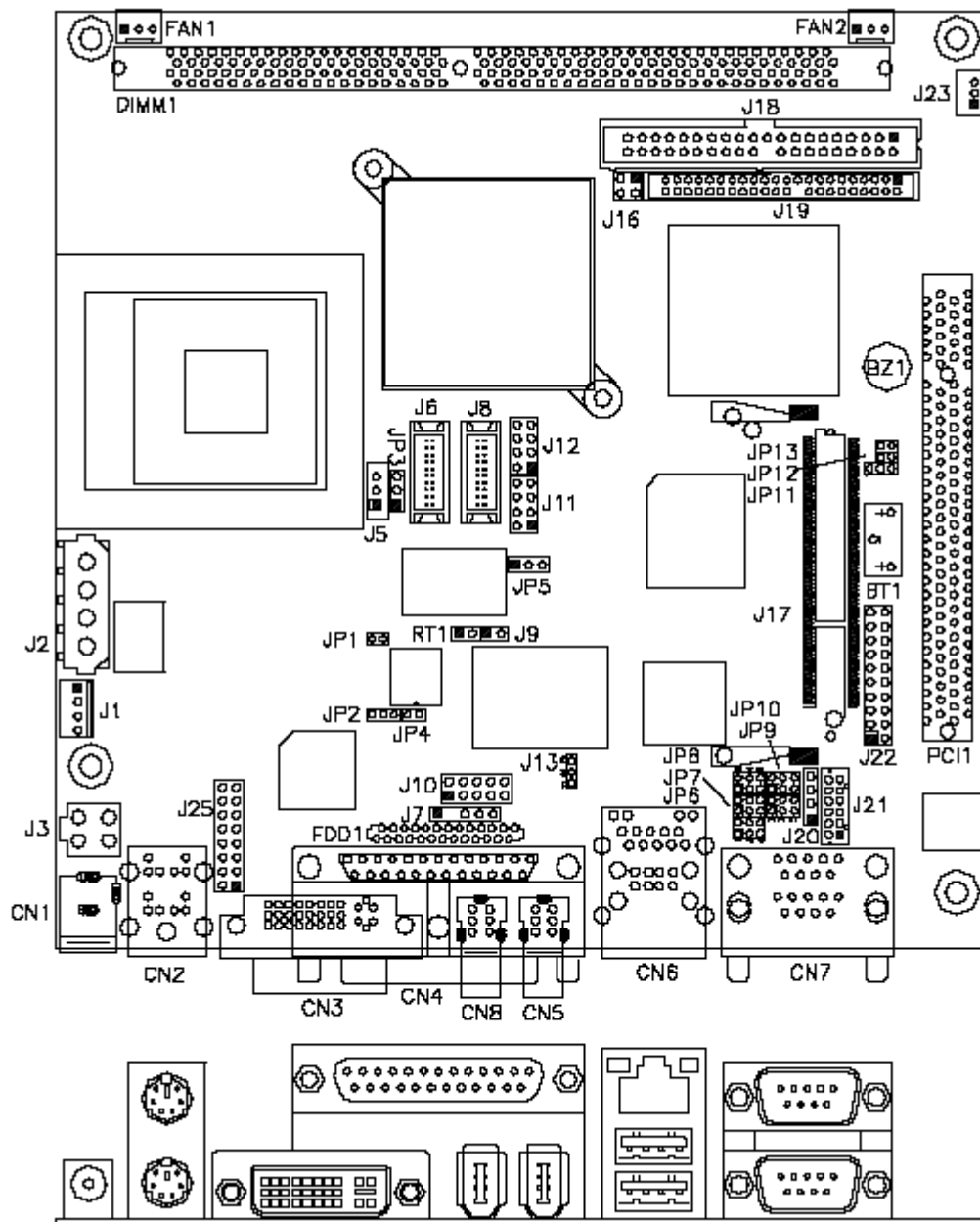
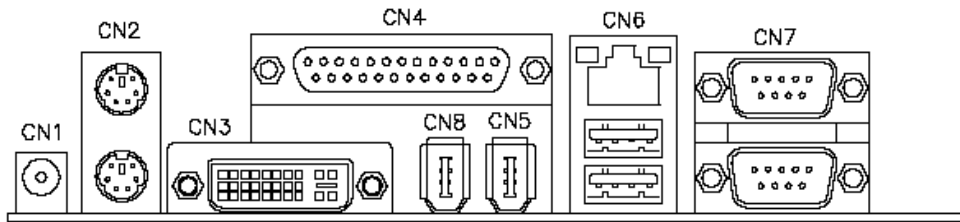


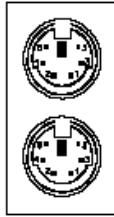
Figure 2.5: Location of Connectors



CN1: DC Jack for DC Adaptor

The DC jack accepts input of 12V or 19V.

CN2: PS/2 Keyboard and PS/2 Mouse Connectors

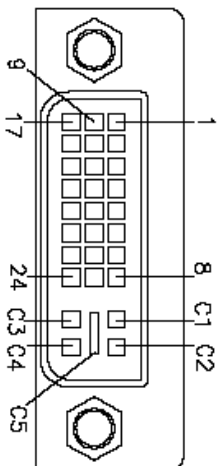


PS/2 Mouse

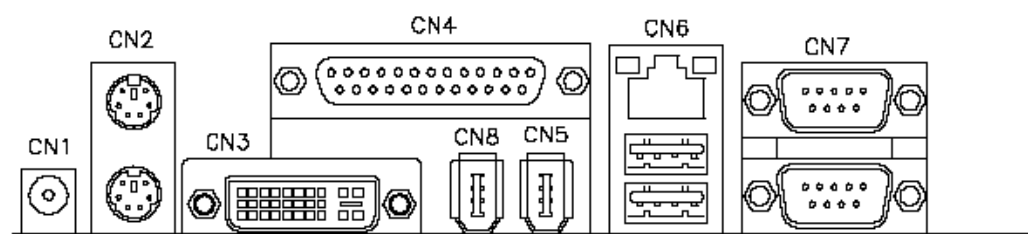
PS/2 Keyboard

Signal Name	Keyboard	Mouse	Signal Name
Keyboard data	1	1	Mouse data
N.C.	2	2	N.C.
GND	3	3	GND
5V	4	4	5V
Keyboard clock	5	5	Mouse clock
N.C.	6	6	N.C.

CN3: DVI-I Connector



Signal Name	Pin #	Pin #	Signal Name
DATA 2-	1	16	HOT POWER
DATA 2+	2	17	DATA 0-
Shield 2/4	3	18	DATA 0+
DATA 4-	4	19	SHIELD 0/5
DATA 4+	5	20	DATA 5-
DDC CLOCK	6	21	DATA 5+
DDC DATA	7	22	SHIELD CLK
VSYNC	8	23	CLOCK -
DATA 1-	9	24	CLOCK +
DATA 1+	10	C1	A RED
SHIELD 1/3	11	C2	A GREEN
DATA 3-	12	C3	A BLUE
DATA 3+	13	C4	HYNC
DDC POWER	14	C5	A GROUND2
A GROUND 1	15	C6	A GROUND3



CN4: Parallel Port Connector

Signal Name	Pin #	Pin #	Signal Name
Line printer strobe	1	14	AutoFeed
PD0, parallel data 0	2	15	Error
PD1, parallel data 1	3	16	Initialize
PD2, parallel data 2	4	17	Select
PD3, parallel data 3	5	18	Ground
PD4, parallel data 4	6	19	Ground
PD5, parallel data 5	7	20	Ground
PD6, parallel data 6	8	21	Ground
PD7, parallel data 7	9	22	Ground
ACK, acknowledge	10	23	Ground
Busy	11	24	Ground
Paper empty	12	25	Ground
Select	13	N/A	N/A

CN5, CN8: 1394 Connectors (option)

CN6: RJ45 and 2 USB Ports

CN6 is a stacked connector with RJ45 on top and 2 USB ports at the bottom.

CN7: COM1 and COM2 Serial Ports

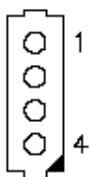
CN7 is a stacked connector with COM1 on top and COM2 at the bottom.

Signal Name	Pin #	Pin #	Signal Name
DCD, Data carrier detect	1	6	DSR, Data set ready
RXD, Receive data	2	7	RTS, Request to send
TXD, Transmit data	3	8	CTS, Clear to send
DTR, Data terminal ready	4	9	RI, Ring indicator
GND, ground	5	10	Not Used

COM2 is jumper selectable for RS-232, RS-422 and RS-485.

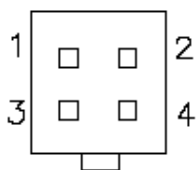
Pin #	Signal Name		
	RS-232	RS-422	RS-485
1	DCD	TX-	DATA-
2	RX	TX+	DATA+
3	TX	RX+	NC
4	DTR	RX-	NC
5	Ground	Ground	Ground
6	DSR	RTS-	NC
7	RTS	RTS+	NC
8	CTS	CTS+	NC
9	RI	CTS-	NC
10	NC	NC	NC

J2: HDD Power Connector



Pin #	Signal Name
1	+12V
2	Ground
3	Ground
4	5V

J3: Internal DC-In Power Connector



Pin #	Signal Name
1	Ground
2	Ground
3	+12V or 19V
4	+12V or 19V

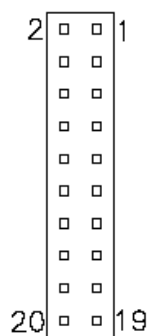
J5: LCD Backlight Setting



Pin #	Signal Name
1	+12V
2	Backlight Enable
3	Ground

J6, J8: LVDS Connectors (1st channel, 2nd channel)

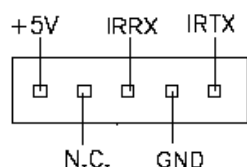
The LVDS connectors on board consist of the first channel (J6) and second channel (J8) and supports 24-bit or 48-bit.



Signal Name	Pin #	Pin #	Signal Name
TX0-	2	1	TX0+
Ground	4	3	Ground
TX1-	6	5	TX1+
5V/3.3V	8	7	Ground
TX3-	10	9	TX3+
TX2-	12	11	TX2+
Ground	14	13	Ground
TXC-	16	15	TXC+
5V/3.3V	18	17	ENABKL
+12V	20	19	+12V

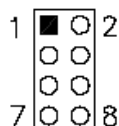
J7: IrDA Connector

J7 is used for an optional IrDA connector for wireless communication.



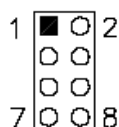
Pin #	Signal Name
1	+5V
2	No connect
3	Ir RX
4	Ground
5	Ir TX

J10: Digital I/O



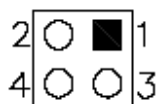
Signal Name	Pin	Pin	Signal Name
GND	1	2	VCC
OUT3	3	4	OUT1
OUT2	5	6	OUT0
IN3	7	8	IN1
IN2	9	10	IN0

J11, J12: USB Port Pin Header



Signal Name	Pin	Pin	Signal Name
Vcc	1	5	Ground
D-	2	6	D+
D+	3	7	D-
Ground	4	8	Vcc

J16: HDD Power Pin Header

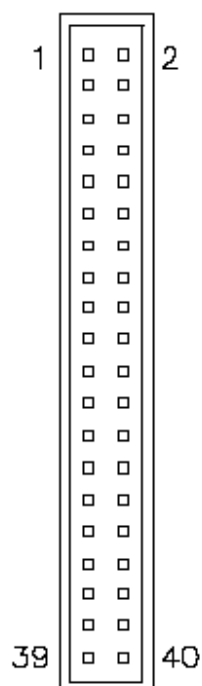


Signal Name	Pin	Pin	Signal Name
Vcc	2	1	Vcc
NC	4	3	Ground

J17: Mini PCI Socket

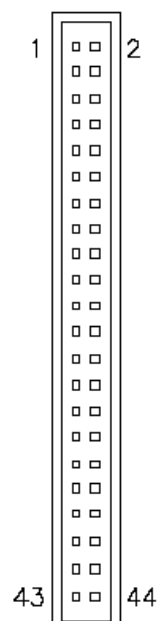
J18, J19: Primary and Secondary IDE Connectors

J18: Primary IDE Connector



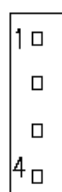
Signal Name	Pin #	Pin #	Signal Name
Reset IDE	1	2	Ground
Host data 7	3	4	Host data 8
Host data 6	5	6	Host data 9
Host data 5	7	8	Host data 10
Host data 4	9	10	Host data 11
Host data 3	11	12	Host data 12
Host data 2	13	14	Host data 13
Host data 1	15	16	Host data 14
Host data 0	17	18	Host data 15
Ground	19	20	Protect pin
DRQ0	21	22	Ground
Host IOW	23	24	Ground
Host IOR	25	26	Ground
IOCHRDY	27	28	Host ALE
DACK0	29	30	Ground
IRQ14	31	32	No connect
Address 1	33	34	No connect
Address 0	35	36	Address 2
Chip select 0	37	38	Chip select 1
Activity	39	40	Ground

J19: Secondary IDE Connector



Signal Name	Pin #	Pin #	Signal Name
Reset IDE	1	2	Ground
Host data 7	3	4	Host data 8
Host data 6	5	6	Host data 9
Host data 5	7	8	Host data 10
Host data 4	9	10	Host data 11
Host data 3	11	12	Host data 12
Host data 2	13	14	Host data 13
Host data 1	15	16	Host data 14
Host data 0	17	18	Host data 15
Ground	19	20	Key
DRQ0	21	22	Ground
Host IOW	23	24	Ground
Host IOR	25	26	Ground
IOCHRDY	27	28	Host ALE
DACK0	29	30	Ground
IRQ14	31	32	No connect
Address 1	33	34	No connect
Address 0	35	36	Address 2
Chip select 0	37	38	Chip select 1
Activity	39	40	Ground
Vcc	41	42	Vcc
Ground	43	44	N.C.

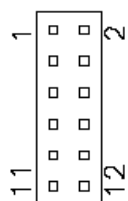
J20: CD-In Pin Header



Pin #	Signal Name
1	CD Audio R
2	Ground
3	Ground
4	CD Audio L

J21: External Audio Connector

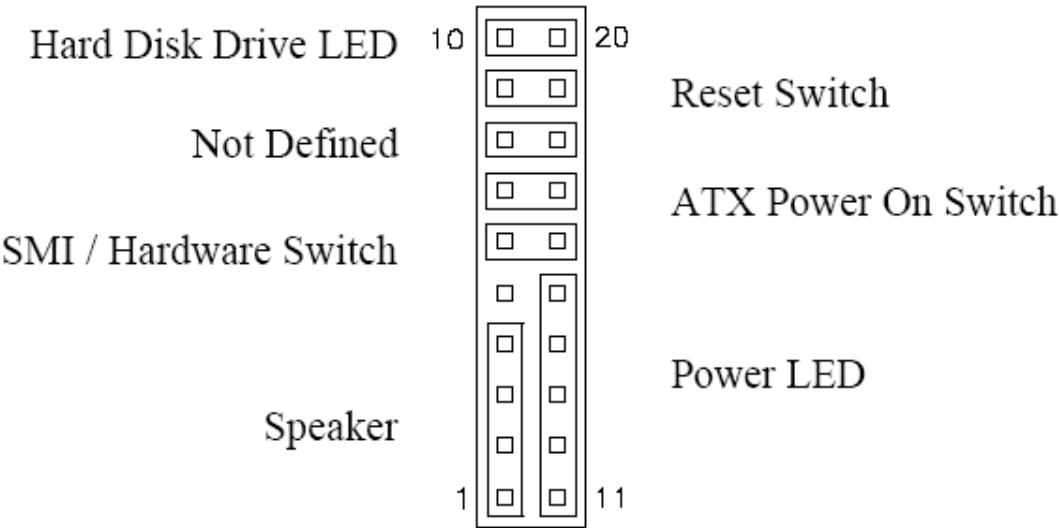
J21 is a 12-pin header that is used to connect to the optional audio cable card that integrates jacks for Line In, Line Out and Mic.



Signal Name	Pin #	Pin #	Signal Name
LINEOUT R	1	2	LINEOUT L
Ground	3	4	Ground
LINEIN R	5	6	LINEIN L
Ground	7	8	Ground
Mic-In	9	10	VREFOUT
Ground	11	12	Protect pin

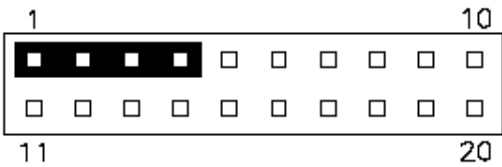
J22: System Function Connector

J22 provides connectors for system indicators that provide light indication of the computer activities and switches to change the computer status. J22 is a 20-pin header that provides interfaces for the following functions.



Speaker: Pins 1 - 4

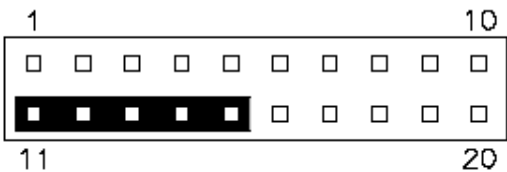
This connector provides an interface to a speaker for audio tone generation. An 8-ohm speaker is recommended.



Pin #	Signal Name
1	Speaker out
2	No connect
3	Ground
4	+5V

Power LED: Pins 11 - 15

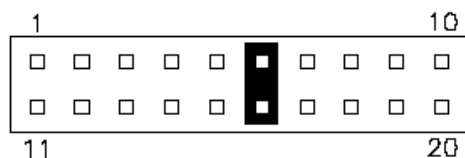
The power LED indicates the status of the main power switch.



Pin #	Signal Name
11	Power LED
12	No connect
13	Ground
14	No connect
15	Ground

SMI/Hardware Switch: Pins 6 and 16

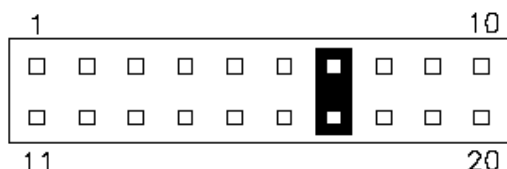
This connector supports the "Green Switch" on the control panel, which, when pressed, will force the system into the power-saving mode immediately.



Pin #	Signal Name
6	SMI
16	Ground

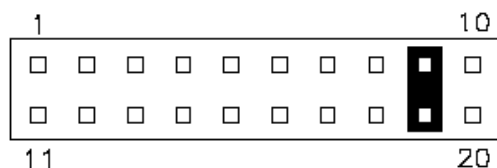
ATX Power ON Switch: Pins 7 and 17

This 2-pin connector is an "ATX Power Supply On/Off Switch" on the system that connects to the power switch on the case. When pressed, the power switch will force the system to power on. When pressed again, it will force the system to power off.



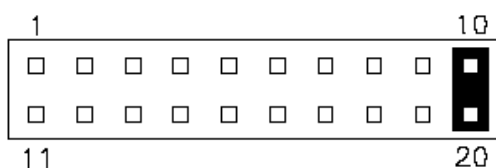
Reset Switch: Pins 9 and 19

The reset switch allows the user to reset the system without turning the main power switch off and then on again. Orientation is not required when making a connection to this header.



Hard Disk Drive LED Connector: Pins 10 and 20

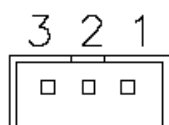
This connector connects to the hard drive activity LED on control panel. This LED will flash when the HDD is being accessed.



Pin #	Signal Name
10	HDD Active
20	5V

J23: Wake On LAN Connector

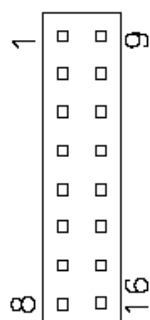
J23 is a 3-pin header for the Wake On LAN function. Wake On LAN will function properly only with an ATX power supply with 5VSB that has 200mA.



Pin #	Signal Name
1	+5VSB
2	Ground
3	-PME

J24: Compact Flash Socket

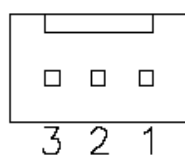
J25: VGA CRT Connector



Signal Name	Pin	Pin	Signal Name
R	1	9	+5V
G	2	10	GND
B	3	11	NC
NC	4	12	DDCDAT
GND	5	13	HSYNC
GND	6	14	VSYNC
GND	7	15	DDCCLK
GND	8	16	TV out

FAN1: CPU Fan Power Connector

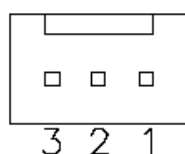
FAN1 is a 3-pin header for the CPU fan. The fan must be a 12V fan.



Pin #	Signal Name
1	Ground
2	+12V
3	Rotation detection

FAN2: System Fan Power Connector

FAN2 is a 3-pin header for system fans. The fan must be a 12V (500mA) fan.



Pin #	Signal Name
1	Ground
2	+12V
3	Rotation detection

3.1 BIOS Setup

This chapter describes the different settings available in the Award BIOS that comes with the board. The items covered are as follows: **BIOS Introduction**, **BIOS Setup**, **Standard CMOS Setup**, **Advanced BIOS Features**, **Advanced Chipset Features**, **Integrated Peripherals**, **Power Management Setup**, **PNP/PCI Configurations**, **PC Health Status**, **Frequency/Voltage Control**, **Load Fail-Safe Defaults**, **Set Supervisor/User Password**, **Save & Exit Setup**, and **Exit without Saving**.

BIOS Introduction

The Award BIOS (Basic Input/Output System) installed in your computer system's ROM supports Intel processors. The BIOS provides critical low-level support for standards devices, such as disk drives, serial ports and parallel ports. It also adds virus and password protection as well as special support for fine-tuning the chipset controlling the entire system.

BIOS Setup

The Award BIOS provides a Setup utility program for specifying the system configurations and settings. The BIOS ROM of the system stores the Setup utility. When you on the computer, the Award BIOS is immediately activated. Pressing the **<Del>** key immediately allows you to enter the Setup utility. If you are a little bit late to press the **<Del>** key, **POST** (Power On Self Test) will continue with its test routines, thus preventing you from invoking the Setup. If you still wish to enter Setup, restart the system by the pressing the "Reset" button or simultaneously pressing the **<Ctrl>**, **<Alt>** and **<Del>** keys. You can also restart by turning the system off and back on again. The following message will appear on the screen:

Press **<DEL>** to Enter Setup

In general, you press the arrow keys to highlight items, **<Enter>** to select, the **<PgUp>** and **<PgDn>** keys to change entries, **<F1>** for help and **<Esc>** to quit.

When you enter the Setup utility, the Main Menu screen will appear on the screen. The Main Menu allows you to select from various Setup functions and exit choices.

Phoenix - AwardBIOS CMOS Setup Utility

Standard CMOS Features	Frequency/Voltage Control
Advanced BIOS Features	Load Fail-Safe Defaults
Advanced Chipset Features	Load Optimized Defaults
Integrated Peripherals	Set Supervisor Password
Power Management Setup	Set User Password
PnP/PCI Configurations	Save & Exit Setup
PC Health Status	Exit Without Saving
ESC : Quit	↑ ↓ → ← : Select Item
F10 : Save & Exit Setup	
Time, Date, Hard Disk Type...	

The section below the Setup items of the Main Menu displays the control keys for this menu. At the bottom of the Main Menu just below the control key section there is another section displaying information on the currently-highlighted item in the list.

Note: If the system cannot boot after making and saving system changes with Setup, the Award BIOS supports an override to the CMOS settings that reset your system to its default.

Warning: It is strongly recommended that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both Award and your system manufacturer to provide the absolute maximum performance and reliability. Changing the defaults could cause the system to become unstable and crash in some cases.

3.1.1 Standard CMOS Setup

“Standard CMOS Setup” choice allows you to record some basic hardware configurations in your computer system and set the system clock and error handling. If the motherboard is already installed in a working system, you will not need to select this option. You will need to run the Standard CMOS option; however, if you change your system hardware configurations, the onboard battery fails, or the configuration stored in the CMOS memory was lost or damaged.

Phoenix - AwardBIOS CMOS Setup Utility
Standard CMOS Features

Date (mm:dd:yy)	Wed, Apr 28, 2004	Item Help
Time (hh:mm:ss)	00 : 00 : 00	Menu Level >
IDE Primary Master	None	Change the day, month, Year and century
IDE Primary Slave	None	
IDE Secondary Master	None	
IDE Secondary Slave	None	
Drive A	1.44M, 3.5 in.	
Drive B	None	
Video	EGA/VGA	
Halt On	All Errors	
Base Memory	640K	
Extended Memory	129024K	
Total Memory	130048K	

At the bottom of the menu are the control keys for use on this menu. If you need any help in each item field, you can press the <F1> key. It will display the relevant information to help you. The memory display at the lower right-hand side of the menu is read-only. It will adjust automatically according to the memory changed. The following describes each item of this menu:

Date

The date format is:

Day: Sun to Sat
Month: 1 to 12
Date: 1 to 31
Year: 1999 to 2099

To set the date, highlight the “Date” field and use the PageUp/PageDown or +/- keys to set the current

time.

Time

The time format is:

Hour:	00 to 23
Minute:	00 to 59
Second:	00 to 59

To set the time, highlight the “Time” field and use the <PgUp>/<PgDn> or +/- keys to set the current time.

IDE Primary HDDs/IDE Secondary HDDs

The onboard PCI IDE connectors provide Primary and Secondary channels for connecting up to four IDE hard disks or other IDE devices. Each channel can support up to two hard disks; the first is the “Master” while the second, the “Slave”.

Press <Enter> to configure the hard disk. The selections include Auto, Manual, and None. Select “Manual” to define the drive information manually. You will be asked to enter the following items:

CYLS:	Number of cylinders
HEAD:	Number of read/write heads
PRECOMP:	Write precompensation
LANDING ZONE:	Landing zone
SECTOR:	Number of sectors

The Access Mode selections are as follows:

CHS	(HD<528MB)
LBA	(HD>528MB and supports Logical Block Addressing)
Large	(for MS-DOS only)
Auto	

Remarks: The mainboard supports two serial ATA ports and are represented in this setting as IDE channel 2/3 master.

Drive/Drive B

These fields identify the types of floppy disk drive A or drive B that has been installed in the computer. The available specifications are:

360KB	1.2MB	720KB	1.44MB	2.88MB
5.25 in	5.25 in	3.5 in	3.5 in	3.5 in

Video

This field selects the type of video display card installed in your system. You can choose the following video display cards:

EGA/VGA	for EGA, VGA, SEGA, SVGA Or PGA monitor adapters (default)
CGA 40	Power up in 40 column mode
CGA 80	Power up in 80 column mode
MONO	for Hercules or MDA adapters

Halt On

This field determines whether or not the system will halt if an error is detected during power up.

No errors	The system boot will not be halted for any error that may be detected.
All errors	Whenever the BIOS detects a non-fatal error, the system will stop and you will be prompted.
All, but Keyboard	The system boot will not be halted for a keyboard Error; it will stop for all other errors.
All, but Diskette	The system boot will not be halted for a disk error; it will stop for all other errors.
All, but Disk/Key	The system boot will not be halted for a keyboard or disk error; it will stop for all others.

3.1.2 Advanced BIOS Features

This section allows you to configure and improve your system and allows you to set up some system features according to your preference.

Phoenix - AwardBIOS CMOS Setup Utility Advanced BIOS Features

		ITEM HELP
CPU Feature	Press Enter	Menu Level >
Virus Warning	Disabled	
CPU L1 and L2 Cache	Enabled	
CPU L3 Cache	Enabled	
Quick Power On Self Test	Enabled	
First Boot Device	Floppy	
Second Boot Device	HDD-0	
Third Boot Device	CDROM	
Boot Other Device	Enabled	
Swap Floppy Drive	Disabled	
Boot Up Floppy Seek	Disabled	
Boot Up NumLock Status	On	
Gate A20 Option	Fast	
Typematic Rate Setting	Disabled	
Typematic Rate (Chars/Sec)	6	
Typematic Delay (Msec)	250	
Security Option	Setup	
APIC Mode	Enabled	
MPS Version Control for OS	1.4	
OS Select For DRAM>64MB	Non-OS2	
Report No FDD For WIN 95	Yes	
Small Logo (EPA) Show	Enabled	

CPU Features

Press **Enter** to configure the settings relevant to CPU Feature.

Virus Warning

If this option is enabled, an alarm message will be displayed when trying to write on the boot sector or on the partition table on the disk, which is typical of the virus.

CPU L1 and L2 Cache/CPU L3 Cache

Cache memory is additional memory that is much faster than conventional DRAM (system memory). CPUs from the 486 type on contain internal cache memory, and most modern PCs have additional (external) cache memory. When the CPU requests data, the system transfers the requested data from the main DRAM into cache memory, for even faster access by the CPU. These items allow you to enable (speed up memory access) or disable the cache function. By default, these items are Enabled.

Quick Power On Self Test

When enabled, this field speeds up the Power On Self Test (POST) after the system is turned on. If it is set to Enabled, BIOS will skip some items.

First/Second/Third Boot Device

These fields determine the drive that the system searches first for an operating system. The options available include Floppy, LS120, HDD-0, SCSI, CDROM, HDD-1, HDD-2, HDD-3, ZIP100, USB-FDD, USB-CDROM, USB-HDD and Disable.

Boot Other Device

These fields allow the system to search for an OS from other devices other than the ones selected in the First/Second/Third Boot Device.

Swap Floppy Drive

This item allows you to determine whether or not to enable Swap Floppy Drive. When **enabled**, the BIOS swaps floppy drive assignments so that Drive A becomes Drive B, and Drive B becomes Drive A. By default, this field is set to **Disabled**.

Boot Up Floppy Seek

This allows you to activate the NumLock function after you power up the system.

Gate A20 Option

This field allows you to select how Gate A20 is worked. Gate A20 is a device used to address memory above 1MB.

Typematic Rate Setting

When **disabled**, continually holding down a key on your keyboard will generate only one instance. When enabled, you can set the two typematic controls listed next. By default, this field is set to **Disabled**.

Typematic Rate (Chars/Sec)

When the typematic rate is enabled, the system registers repeated keystroke speeds. Settings are from 6 to 30 characters per second.

Typematic Delay (Msec)

When the typematic rate is enabled, this item allows you to set the time interval for displaying the first and second characters. By default, this item is set to 250msec.

Security Option

This field allows you to limit access to the System and Setup. The default value is Setup. When you select System, the system prompts for the User Password every time you boot up. When you select Setup, the system always boots up and prompts for the Supervisor Password only when the Setup utility is called up.

APIC Mode

APIC stands for Advanced Programmable Interrupt Controller. The default setting is **Enabled**.

MPS Version Control for OS

This option specifies the MPS (Multiprocessor Specification) version for your operating system. MPS version 1.4 added extended configuration tables to improve support for multiple PCI bus configurations and improve future expandability.

OS Select for DRAM >64MB

This option allows the system to access greater than 64MB of DRAM memory when used with OS/2. That has to depend on certain BIOS calls to access memory. The default setting is Non-OS/2.

Report No FDD for WIN 95

If you are using Windows 95/98 without a floppy disk drive, select **Enabled** to release IRQ6. This is required to pass Windows 95/98's SCT test. You should also disable the Onboard FDC Controller in the Integrated Peripherals screen when there is no floppy drive in the system. If you set this feature to **Disabled**, the BIOS will not report the missing floppy drive to Win95/98.

Small Logo (EPA) Show

The EPA logo appears at the right side of the monitor screen when the system is boot up. The default setting is **Enabled**.

3.1.3 Advanced Chipset Features

This Setup menu controls the configuration of the chipset.

Phoenix - AwardBIOS CMOS Setup Utility
Advanced Chipset Features

DRAM Timing Selectable	By SPD	ITEM HELP
CAS Latency Time	2	Menu Level >
Active to Precharge Delay	6	
DRAM RAS# to CAS# Delay	3	
DRAM RAS# Precharge	3	
DRAM Data Integrity Mode	ECC	
MGM Core Frequency	Auto Max 266MHz	
System BIOS Cacheable	Enabled	
Video BIOS Cacheable	Enabled	
Memory Hole at 15M-16M	Disabled	
Delayed Transaction	Enabled	
Delay Prior to Thermal	16 Min	
AGP Aperture Size (MB)	64	
** On-Chip VGA Setting **		
On-Chip VGA	Enabled	
On-Chip Frame Buffer Size	32MB	
Boot Display	CRT+DVI	
TV Standard	Off	
Video Connector	Automatic	
TV Format	Auto	
Panel Scaling	Auto	
Panel Number	1024x768 18bit SC	

DRAM Timing Selectable

This option refers to the method by which the DRAM timing is selected. The default is **By SPD**.

CAS Latency Time

You can configure CAS latency time in HCLKs as 2 or 2.5 or 3. The system board designer should set the values in this field, depending on the DRAM installed. Do not change the values in this field unless you change specifications of the installed DRAM or the installed CPU.

Active to Precharge Delay

The default setting for the Active to Precharge Delay is 7.

DRAM RAS# to CAS# Delay

This option allows you to insert a delay between the RAS (Row Address Strobe) and CAS (Column Address Strobe) signals. This delay occurs when the SDRAM is written to, read from or refreshed. Reducing the delay improves the performance of the SDRAM.

DRAM RAS# Precharge

This option sets the number of cycles required for the RAS to accumulate its charge before the SDRAM refreshes. The default setting for the Active to Precharge Delay is 3.

DRAM Data Integrity Mode

Select ECC if your memory module supports it. The memory controller will detect and correct single-bit soft memory errors. The memory controller will also be able to detect double-bit errors though it will not be able to correct them. This provides increased data integrity and system stability.

MGM Core Frequency

This field sets the frequency of the DRAM memory installed. The default setting is **Auto Max 266MHz**.

System BIOS Cacheable

The setting of **Enabled** allows caching of the system BIOS ROM at F000h-FFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

Video BIOS Cacheable

The **Enabled** setting allows caching of the video BIOS ROM at C0000h-F7FFFh, resulting in better video performance. However, if any program writes to this memory area, a system error may result.

Memory Hole at 15M~16M

In order to improve performance, certain space in memory can be reserved for ISA cards. This memory must be mapped into the memory space below 16MB. The choices are **Enabled** and **Disabled**.

Delayed Transaction

The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles. Select **Enabled** to support compliance with PCI specification version 2.1.

Delay Prior to Thermal

This field activates the CPU thermal function after the system boots for the set number of minutes. The options are 16 min or 64 min.

AGP Aperture Size

The field sets aperture size of the graphics. The aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation. The default setting is 64M.

On-Chip VGA

The default setting is **Enabled**.

On-Chip Frame Buffer Size

The default setting is 32MB. The options available include 1MB, 4MB, 8MB and 16MB.

Boot Display

The default setting is CRT+DVI. The options available include some combinations with LVDS and TV-out. The mainboard supports dual view (CRT with LVDS or TV-out).

TV Standard

The default setting is **Off**.

Video Connector

The default setting is **Automatic**.

TV Format

The default setting is **Auto**.

Panel Scaling

The default setting is **Auto**. The options available include On and Off.

Panel Number

These fields allow you to select the LCD panel type. The default values for these ports are:

640x480	18bit SC
800x600	18bit SC
1024x768	18bit SC
1280x1024	24bit DC
1400x1050	18bit DC
1024x768	24bit SC
1600x1200	24bit DC
1280x1024	18bit DC

Integrated Peripherals

This section sets configurations for your hard disk and other integrated peripherals. The first screen shows three main items for user to select. Once an item is selected, a submenu appears. Details follow.

Phoenix - AwardBIOS CMOS Setup Utility
Integrated Peripherals

OnChip IDE Device	Press Enter	ITEM HELP
Onboard Device	Press Enter	Menu Level >
SuperIO Device	Press Enter	

Phoenix - AwardBIOS CMOS Setup Utility
OnChip IDE Device

On-Chip Primary PCI IDE	Enabled	ITEM HELP
IDE Primary Master PIO	Auto	Menu Level >
IDE Primary Slave PIO	Auto	
IDE Primary Master UDMA	Auto	
IDE Primary Slave UDMA	Auto	
On-Chip Secondary PCI IDE	Enabled	
IDE Secondary Master PIO	Auto	
IDE Secondary Slave PIO	Auto	
IDE Secondary Master UDMA	Auto	
IDE Secondary Slave UDMA	Auto	
IDE HDD Block Mode	Enabled	

Phoenix - AwardBIOS CMOS Setup Utility
Onboard Device

USB Controller	Enabled	ITEM HELP
USB 2.0 Controller	Enabled	Menu Level >
USB Keyboard Support	Disabled	
USB Mouse Support	Disabled	
AC97 Audio	Auto	
Init Display First	PCI Slot	
Power On After Fail	Off	

Phoenix - AwardBIOS CMOS Setup Utility
SuperIO Device

Onboard FDC Controller	Enabled	ITEM HELP
Onboard Serial Port 1	3F8/IRQ4	Menu Level >
Onboard Serial Port 2	2F8/IRQ3	
UART Mode Select	Normal	
RxD , TxD Active	Hi, Lo	
IR Transmission Delay	Disabled	
UR2 Duplex Mode	Half	
Use IR Pins	IR-Rx2Tx2	
Onboard Parallel Port	378/IRQ7	
Parallel Port Mode	SPP	
EPP Mode Select	EPP1.7	
ECP Mode Use DMA	3	

OnChip Primary/Secondary PCI IDE

The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select **Enabled** to activate each channel separately.

IDE Primary/Secondary Master/Slave PIO

These fields allow your system hard disk controller to work faster. Rather than have the BIOS issue a series of commands that transfer to or from the disk drive, PIO (Programmed Input/Output) allows the BIOS to communicate with the controller and CPU directly.

The system supports five modes, numbered from 0 (default) to 4, which primarily differ in timing. When Auto is selected, the BIOS will select the best available mode.

IDE Primary/Secondary Master/Slave UDMA

These fields allow your system to improve disk I/O throughput to 33Mb/sec with the Ultra DMA/33 feature. The options are Auto and Disabled.

IDE HDD Block Mode

This field allows your hard disk controller to use the fast block mode to transfer data to and from your hard disk drive.

USB Controller

The options for this field are Enabled and Disabled. By default, this field is set to **Enabled**.

USB 2.0 Controller

The options for this field are Enabled and Disabled. By default, this field is set to **Enabled**. In order to use USB 2.0, necessary OS drivers must be installed first. Please update your system to Windows 2000 SP4 or Windows XP SP1.

USB Keyboard Support

The options for this field are Enabled and Disabled. By default, this field is set to **Disabled**.

USB Mouse Support

The options for this field are Enabled and Disabled. By default, this field is set to **Disabled**.

AC97 Audio

The default setting of the AC97 Audio is **Auto**.

Init Display First

The default setting is **PCI Card**.

Power On After Fail

The setting configures the system power on status when power is restored to the system after a power failure occurrence. The default setting is **Off**.

Onboard FDC Controller

Select Enabled if your system has a floppy disk controller (FDC) installed on the motherboard and you wish to use it. If you install an add-in FDC or the system has no floppy drive, select Disabled in this field. This option allows you to select the onboard FDD port.

Onboard Serial/Parallel Port

These fields allow you to select the onboard serial and parallel ports and their addresses. The default values for these ports are:

Serial Port 1	3F8/IRQ4
Serial Port 2	2F8/IRQ3
Parallel Port	378H/IRQ7

UART Mode Select

This field determines the UART 2 mode in your computer. The default value is **Normal**. Other options include IrDA and ASKIR.

Parallel Port Mode

This field allows you to determine parallel port mode function

SPP	Standard Printer Port
EPP	Enhanced Parallel Port
ECP	Extended Capabilities Port

3.1.4 Power Management Setup

The Power Management Setup allows you to save energy of your system effectively.

Phoenix - AwardBIOS CMOS Setup Utility
Power Management Setup

		ITEM HELP
Power-Supply Type	ATX	Menu Level >
ACPI Function	Enabled	
Power Management	User Define	
Video Off Method	V/H SYNC+Blank	
Video Off In Suspend	Yes	
Suspend Type	Stop Grant	
Modem Use IRQ	3	
Suspend Mode	Disabled	
HDD Power Down	Disabled	
Soft-Off by PWR-BTTN	Instant-Off	
CPU THRM-Throttling	50%	
Wake-Up by PCI Card	Disabled	
Power On by Ring	Disabled	
Resume by Alarm	Disabled	
Date (of Month) Alarm	0	
Time (hh:mm:ss) Alarm	0 : 0 : 0	
** Reload Global Timer Events **		
Primary IDE 0	Enabled	
Primary IDE 1	Enabled	
Secondary IDE 0	Enabled	
Secondary IDE 1	Enabled	
FDD, COM, LPT Port	Enabled	
PCI PIRQ[A-D] #	Enabled	

Power Supply Type

Use this field to select the power supply type used in the system. The default setting is ATX.

ACPI Function

Enable this function to support ACPI (Advance Configuration and Power Interface).

Power Management

This field allows you to select the type of power saving management modes. There are four selections for Power Management.

Min. Power Saving	Minimum power management
Max. Power Saving	Maximum power management
User Define	Each of the ranges is from 1min to 1hr. Except for HDD Power Down which ranges from 1 min to 15 min.

Video Off Method

This field defines the Video Off features. There are three options.

V/H SYNC + Blank	Default setting, blank the screen and turn off Vertical and horizontal scanning
DPMS	Allows BIOS to control the video display.
Blank Screen	Writes blanks to the video buffer

Video Off In Suspend

When enabled, the video is off in suspend mode. The default setting is **Yes**.

Suspend Type

The default setting for the Suspend Type field is **Stop Grant**.

Modem Use IRQ

This field sets the IRQ used by the Modem. By default, the setting is **3**.

Suspend Mode

When enabled, and after the set time of system inactivity, all devices except the CPU will be shut off.

HDD Power Down

When enabled, and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.

Soft-Off by PWRBTN

This field defines the power-off mode when using an ATX power supply. The Instant Off mode allows powering off immediately upon pressing the power button. In the Delay 4 Sec mode, the system powers off when the power button is pressed for more than four seconds or enters the suspend mode when pressed for less than 4 seconds.

CPU THRM-Throttling

When the system enters Doze mode, the CPU clock runs only part of the time. You may select the percent of time that the clock runs.

Wake Up by PCI Card

By default, this field is disabled.

Power On by Ring

This field enables or disables the power on of the system through the modem connected to the serial port or LAN.

Resume by Alarm

This field enables or disables the resumption of the system operation. When enabled, the user is allowed to set the Date and Time.

Reload Global Timer Events

The HDD, FDD, COM, LPT ports and PCI PIRQ are I/O events that can prevent the system from entering a power saving mode or can awaken the system from such a mode. When an I/O device wants to gain the attention of the operating system, it signals this by causing an IRQ to occur. When the operating system is ready to respond to the request, it interrupts itself and performs the service.

3.1.5 PnP/PCI Configurations

This option configures the PCI bus system. All PCI bus systems on the system use INT#, thus all installed PCI cards must be set this value.

Phoenix - AwardBIOS CMOS Setup Utility PnP/PCI Configurations

Reset Configuration Data	Disabled	ITEM HELP
Resources Controlled By IRQ Resources	Auto (ESCD) Press Enter	Menu Level
PCI/VGA Palette Snoop	Disabled	Select Yes if you are using a Plug and Play capable operating system Select No if you need the BIOS to configure non-boot devices

Reset Configuration Data

This field allows you to determine whether to reset the configuration data or not. The default value is **Disabled**.

Resources Controlled by

This PnP BIOS can configure all of the boot and compatible devices automatically with the use of an PnP operating system such as Windows 95.

PCI/VGA Palette Snoop

Some non-standard VGA display cards may not show colors properly. This field allows you to set whether or not MPEG ISA/VESA VGA cards can work with PCI/VGA. When this field is enabled, a PCI/VGA can work with PCI/VGA. When this field is enabled, a PCI/VGA can work with an MPEG ISA/VESA VGA card. When this field is disabled, a PCI/VGA cannot work with an MPEG/VESA card.

3.1.6 PC Health Status

This section shows the parameters in determining the PC Health Status. These parameters include temperatures, fan speeds and voltages.

Phoenix - AwardBIOS CMOS Setup Utility PC Health Status

		ITEM HELP
CPU Warning Temperature	85°C	Menu Level >
Shutdown Temperature	Disabled	
System Temp.	45°C/113°F	
CPU Temp	52°C/125°F	
FAN1 Speed	5400 RPM	
FAN2 Speed	5463 RPM	
FAN3 Speed	5388 RPM	
Vcore(V)	1.02 V	
VGMCH(V)	1.32 V	
+3.3V	3.32 V	
+5V	4.94 V	
+12V	12.03 V	
VBAT	3.21 V	
5VSB(V)	4.96 V	
Smart Fan1 Temp	Disabled	
Smart Fan2 Temp	Disabled	

3.1.7 Load Fail-Safe Defaults

This option allows you to load the troubleshooting default values permanently stored in the BIOS ROM. These default settings are non-optimal and disable all high-performance features.

3.1.8 Load Optimized Defaults

This option allows you to load the default values to your system configuration. These default settings are optimal and enable all high performance features.

3.1.9 Set Supervisor Password

These two options set the system password. Supervisor Password sets a password that will be used to protect the system and Setup utility. User Password sets a password that will be used exclusively on the system. To specify a password, highlight the type you want and press **<Enter>**. The Enter password: message prompts on the screen. Type the password, up to eight characters in length, and press **<Enter>**. The system confirms your password by asking you to type it again. After setting a password, the screen automatically returns to the main screen.

To disable a password, just press the **<Enter>** key when you are prompted to enter the password. A message will confirm the password to be disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

3.1.10 Save & Exit Setup

This option allows you to determine whether or not to accept the modifications. If you type “Y”, you will quit the Setup utility and save all changes into the CMOS memory. If you type “N”, you will return to Setup utility.

3.1.11 Exit without Saving

Select this option to exit the Setup utility without saving the changes you have made in this section. Typing “Y” will quit the Setup utility without saving the modifications. Typing “N” will return you to Setup utility.

Chapter 4 Installation of Drivers

This chapter describes the installation procedures for software and drivers under the Windows 98SE, Windows ME, Windows 2000 and Windows XP. The software and drivers are included with the motherboard. The contents include **Intel Chipset Software Installation Utility, VGA Drivers Installation, AC97 Codec Audio Driver Installation, and Intel PRO LAN Drivers Installation.**

Important Note:

After installing your Windows operating system (Windows 98SE/ME/2000/XP), you must install first the Intel Chipset Software Installation Utility before proceeding with the installation of drivers.

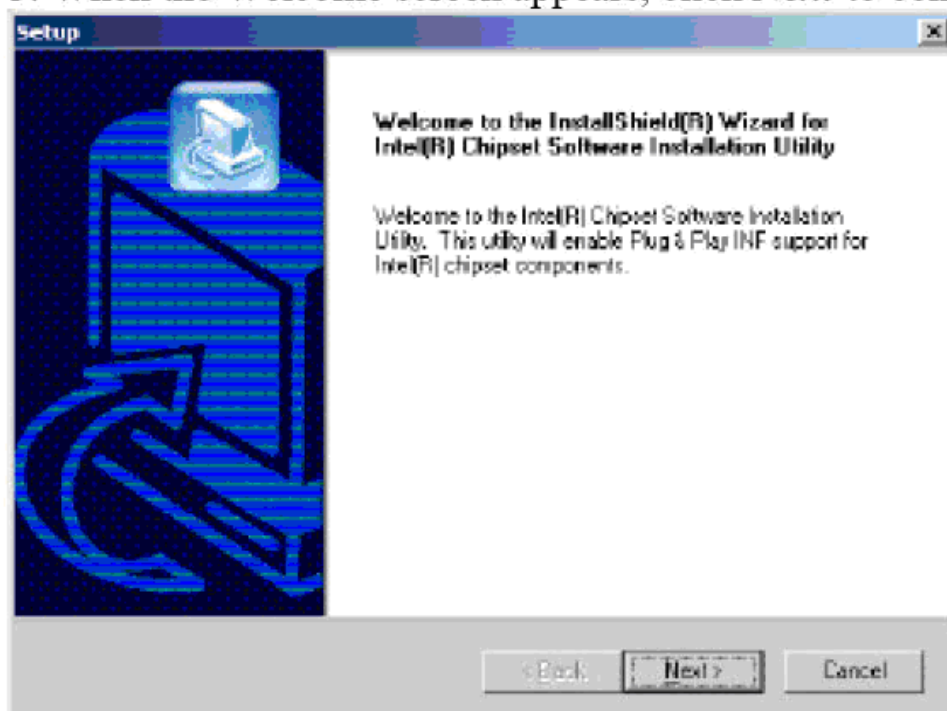
Intel Chipset Software Intallation Utility

The Intel Chipset Drivers should be installed first before the software drivers to enable Plug & Play INF support for Intel chipset components. Follow the instructions below to complete the installation under Windows 98SE/ME/2000/XP.

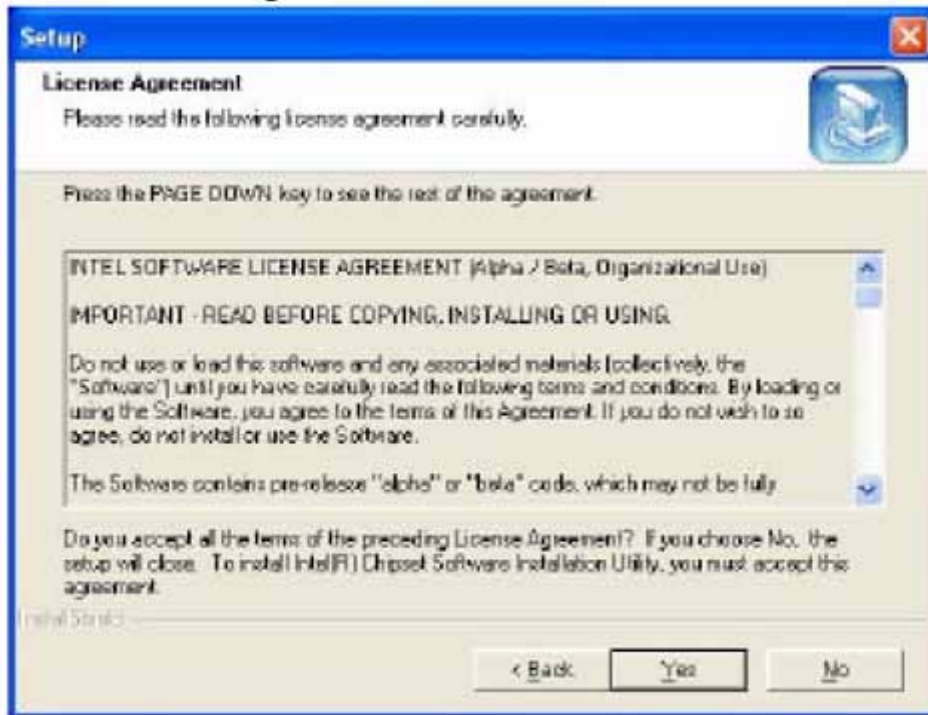
1. Insert the CD that comes with the board. Click *Intel Chipsets* and then *Intel(R) 855GME Chipset Drivers*.
2. Click *Intel(R) Chipset Software Installation Utility*.



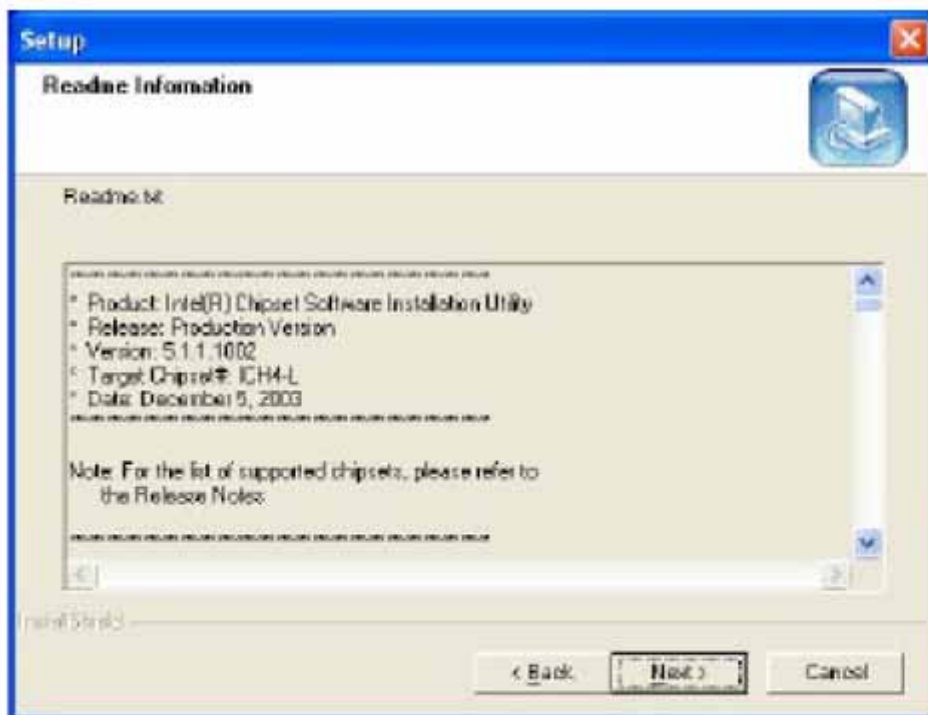
3. When the Welcome screen appears, click *Next* to continue.



4. Click *Yes* to accept the software license agreement and proceed with the installation process.



5. On Readme Information screen, click *Next* to continue the installation.



6. The Setup process is now complete. Click *Finish* to restart the computer and for changes to take effect. When the computer has restarted, the system will be able to find some devices. Restart your computer when prompted.

VGA Drivers Installation

To install the VGA drivers, follow the steps below to proceed with the installation.

1. Insert the CD that comes with the motherboard. Click *Intel Chipsets* and then *Intel(R) 855GME Chipset Drivers*.
2. Click *Intel(R) 855GME Chipset Family Graphics Driver*.



3. When the Welcome screen appears, click *Next* to continue.
4. Click *Yes* to agree with the license agreement and continue the installation.
5. Restart the computer as prompted and for changes to take effect.

AC97 Codec Audio Driver Installation

Follow the steps below to install the Realtek AC97 Codec Audio Drivers.

1. Insert the CD that comes with the motherboard. Click **Intel Chipsets** and then **Intel(R) 855GME Chipset Drivers**.
2. Click **Realtek AC'97 Codec Audio Driver**.



3. Click **Finish** to restart the computer and for changes to take effect.

Intel PRO LAN Drivers Installation

Follow the steps below to complete the installation of the Intel PRO LAN drivers.

1. Insert the CD that comes with the motherboard. Click *LAN Card* and then *Intel(R) PRO LAN Drivers*.



2. Click *Install Base Software* to continue.



3. When prompted, please to restart the computer for new settings to take effect.

Chapter 5 Touch Screen Installation

This chapter describes how to install drivers and other software that will allow your PenMount 5000 Controller Board (USB) to work with different operating systems.

NOTE: PenMount USB drivers support up to 15 USB controllers.

5.1 Introduction to Touch Screen Controller Board

The control board is configured for use with the USB interface. It connects to the touch screen, power supply and computer system's USB port, and supports 4-, 5- and 8-wire touch screens. The control board has some advanced functions, such as PnP and non-PnP mode adjustable baud rate, thus making easy for customers to select different touch screens without changing the control board. The size of the board is 25 by 60mm, and it has two connectors and one dipswitch on-board.



Figure 5.1: Bird's Eye View of Control Board

5.2 Windows Me/2000/XP USB Driver Installation for 5000 Boards

Before installing the Windows Me/2000/XP USB driver software, you must have the Windows Me/2000/XP system installed and running on your computer. You must also have one of the following PenMount USB controller boards installed: 5184 or 51A5. Contents of the PenMount Windows Me/2000/XP USB driver folder are listed below.

Setup.exe
PenMount 98.inf
PenMount.inf
Pm_lower.sys
Pm_upper.sys

If you have an older version of the PenMount Windows Me/2000/XP USB driver installed in your

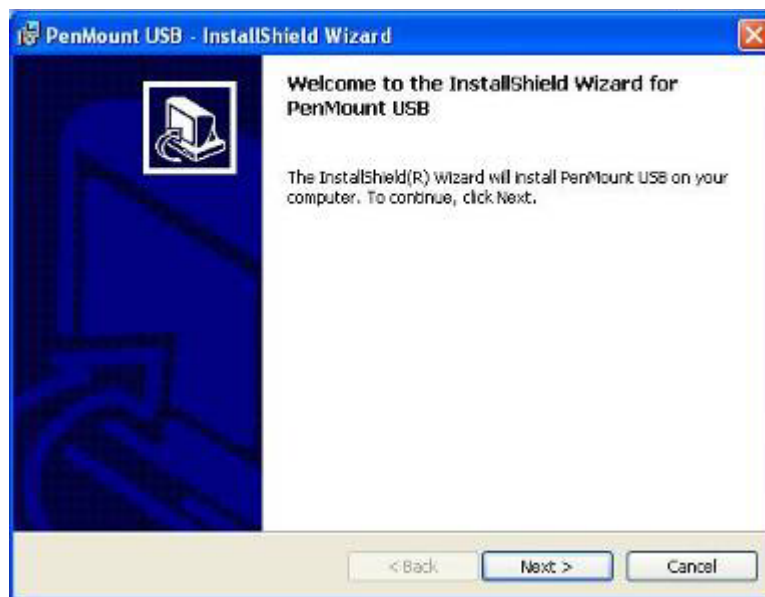
system, please remove it first. Follow the steps below to install the PenMount Windows Me/2000/XP USB driver.

5.2.1 Insert the product cd install **setup.exe**. the screen below would appear.

Click touch panel driver



IMPORTANT! Before installing the driver software you *must* plug the board into a USB port.

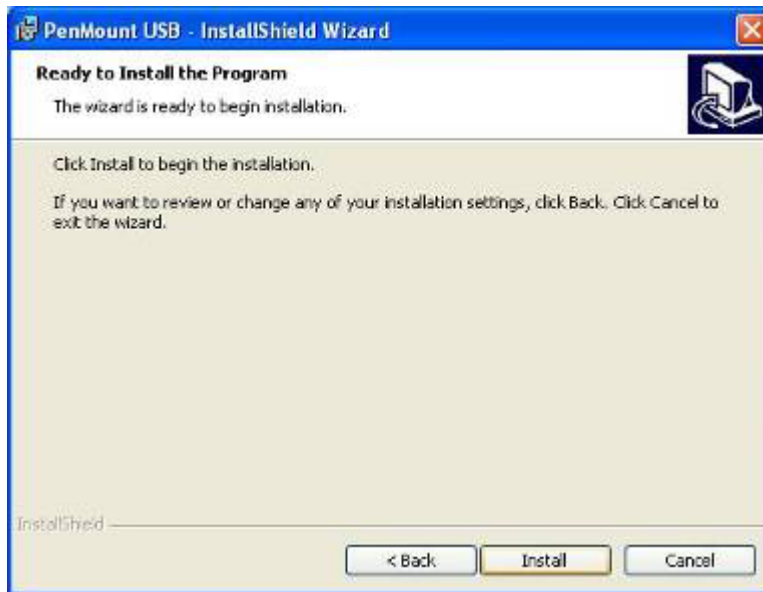


5.2.2 The screen displays 'InstallShield Wizard' to install the PenMount Windows Me/2000/XP driver. Click 'Next' to begin installing the PenMount USB driver to system.

5.2.3 The license agreement appears. Click 'Next'.



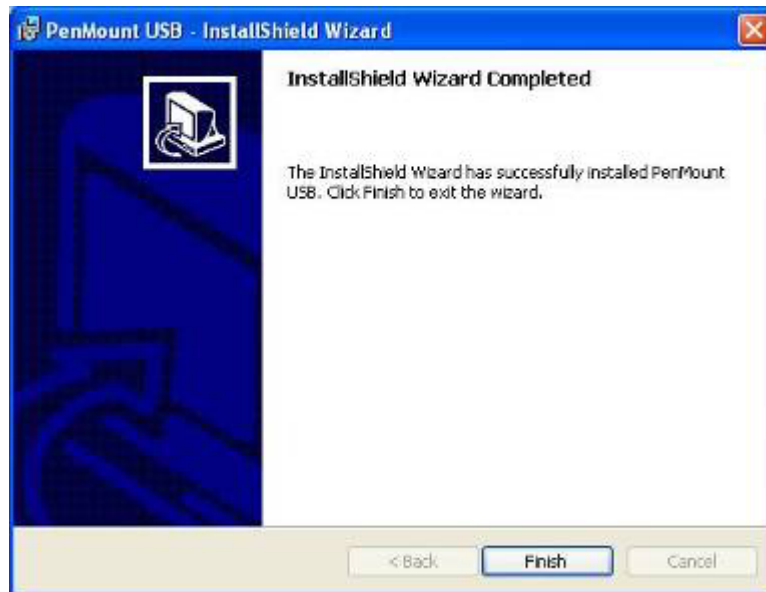
5.2.4 The next screen shows 'Ready to Install the Program'. Click 'Install'.



5.2.5 The 'InstallShield Wizard completed' screen appears. Click 'Finish'.



- 5.2.6** A message box appears stating the driver does not have an MS Logo. Select 'Continue Anyway' to finish the installation. The PenMount USB driver is now completely installed.



Configuring the PenMount Windows Me/2000/XP USB Driver

Upon rebooting, the computer automatically finds the new 5000 USB controller board. The touch screen is connected but not calibrated. Follow the procedures below to carry out calibration.

5.2.6.1 After installation, click the PenMount Monitor icon "PM" in the menu bar.

5.2.6.2 When the PenMount Control Panel appears, click "Calibrate."

PenMount Control Panel

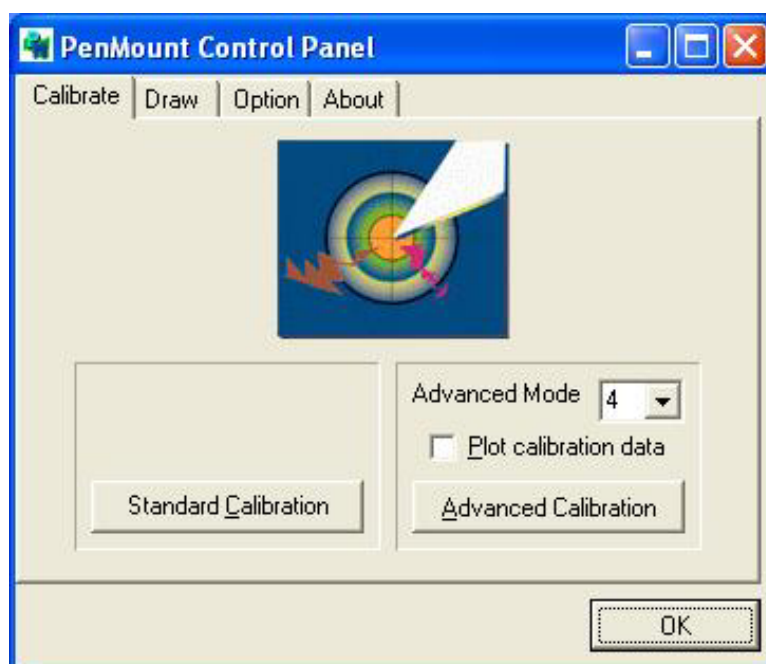
The functions of the PenMount Control Panel are **Calibrate**, **Draw**, and **About**, which are explained in the following sections.

Calibrate

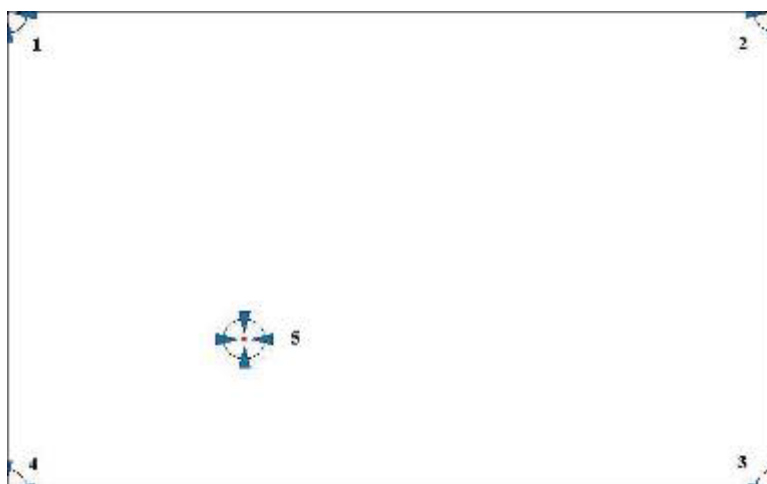
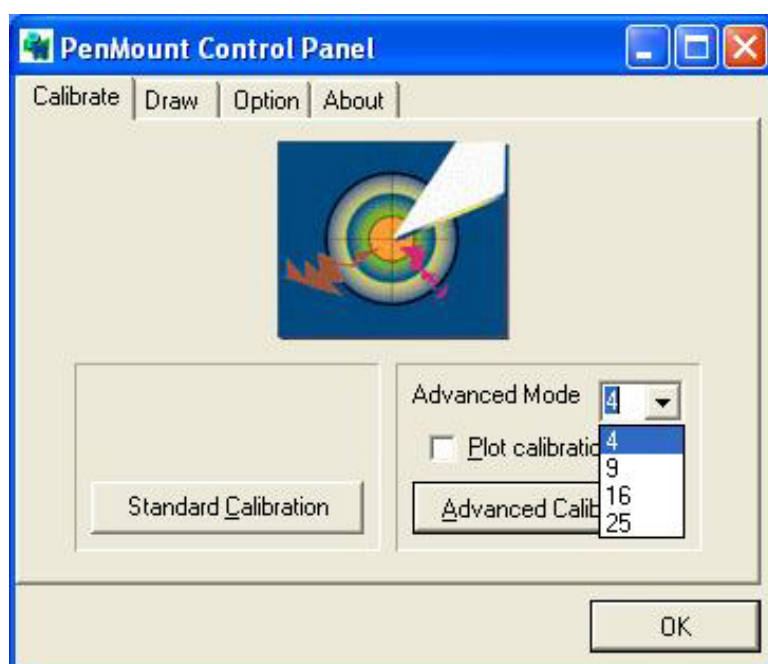
This function offers two ways to calibrate your touch screen. 'Standard Calibration' adjusts most touch screens. 'Advanced Calibration' adjusts aging touch screens.

Standard Calibration Click this button and arrows appear pointing to red squares. Use your finger or stylus to touch the red squares in sequence. After the fifth red point calibration is complete. To skip, press 'ESC'.

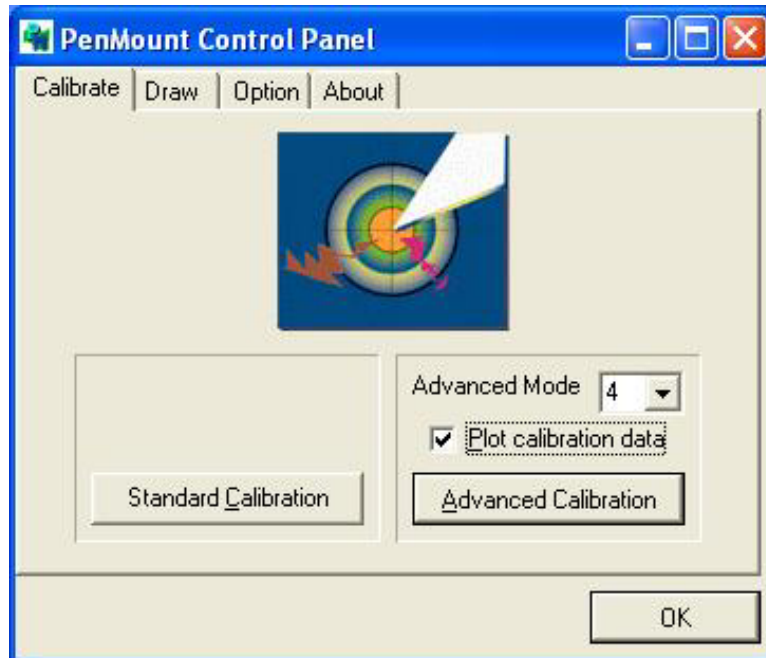
Advanced Calibration Advanced Calibration uses 4, 9, 16 or 25 points to effectively calibrate touch panel linearity of aged touch screens. Click this button and touch the red squares in sequence with a stylus. To skip, press ESC'.



NOTE: The older the touch screen, the more Advanced Mode calibration points you need for an accurate calibration. Use a stylus during Advanced Calibration for greater accuracy.

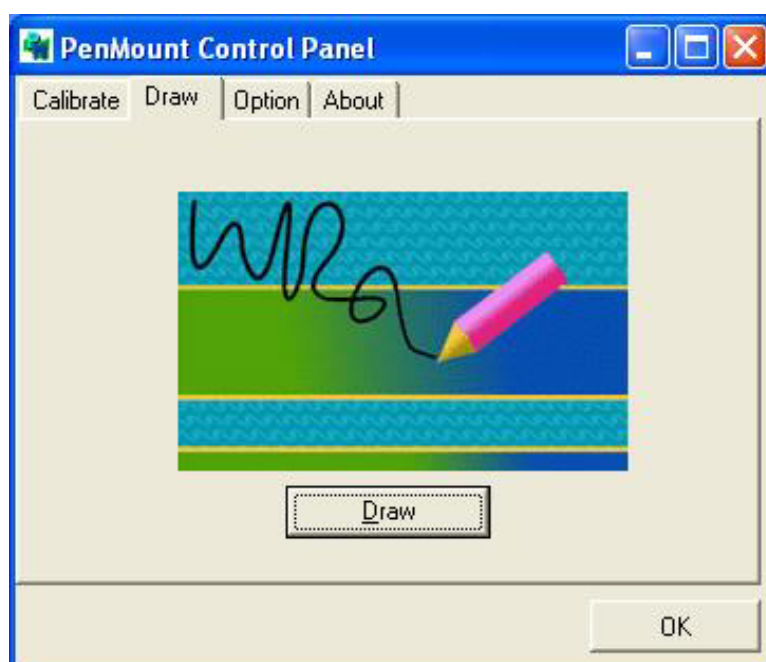


Plot Calibration Data **Check this function and a touch panel linearity comparison graph appears when you have finished Advanced Calibration. The blue lines show linearity before calibration and black lines show linearity after calibration.**

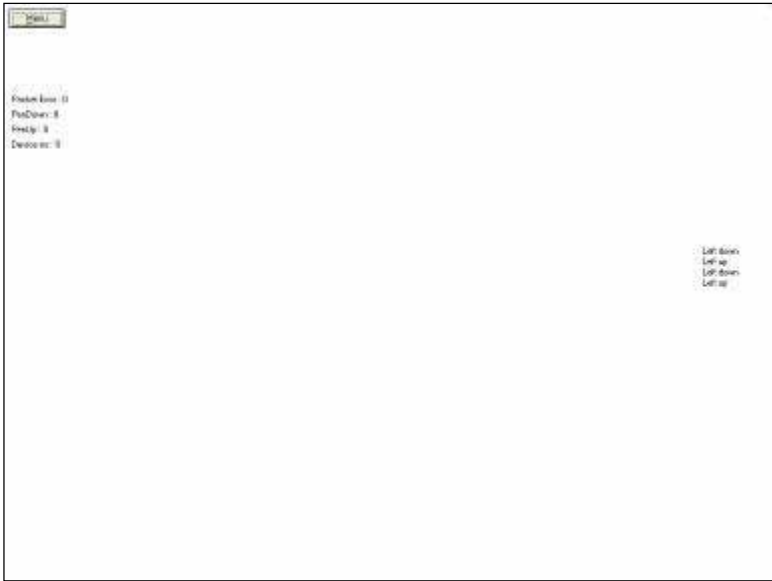


Draw

Tests or demonstrates the PenMount touch screen operation. The display shows touch location. Click **Draw** to start.



Touch the screen with your finger or a stylus and the drawing screen registers touch activity such **left**, **right**, **up**, **down**, **pen up**, and **pen down**.



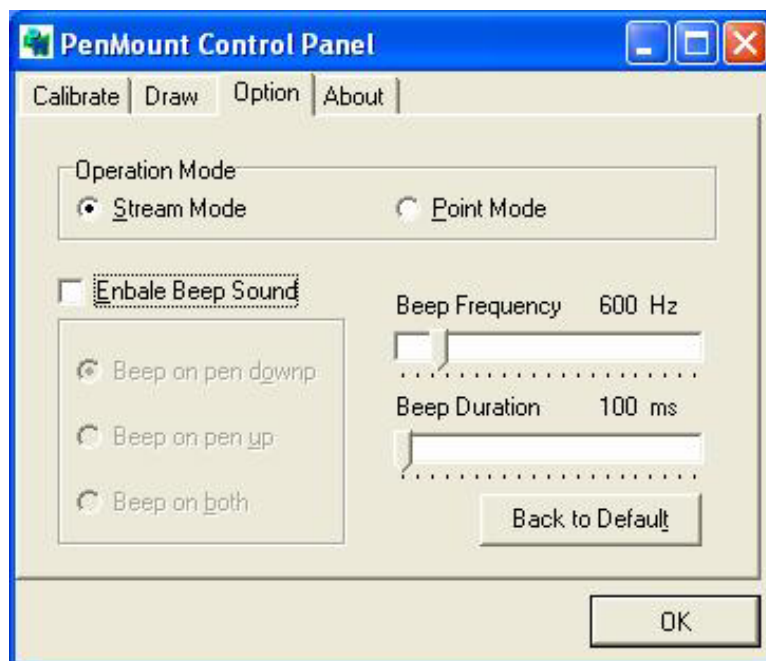
Click Clear Screen to clear the drawing.



Options

This panel function supports two modes—Operation Mode and Beep Sound Mode—which allow configuration for specific touch screen applications, such as point-of-sales (POS) terminals.

- Operation Mode **This mode enables and disables the mouse's ability to drag on-screen icons—useful for configuring POS terminals.**
- Stream Mode*** – Select this mode and the mouse functions as normal and allows dragging of icons.
- Point Mode*** – Select this mode and the mouse only provides a click function, and dragging is disabled.
- Beep Sound Mode ***Enable Beep Sound*** – turns beep function on and off
- Beep on Pen Down*** – beep occurs when pen comes down
- Beep on Pen Up*** – beep occurs when pen is lifted up
- Beep on both of Pen Down/Up*** – beep occurs on both
- Beep Frequency*** – modifies sound frequency
- Beep Duration*** – modifies sound duration



About

This panel displays information about the PenMount controller and driver version.



PenMount Monitor Menu Icon

The PenMount monitor icon (PM) appears in the menu bar of Windows Me/2000/XP system after the Windows Me/2000/XP USB driver is installed.



PenMount Monitor has the following functions.



Beep	Turns touch screen beep on or off.
Right Button	When you select this function, a mouse icon appears in the right-bottom of the screen. Click this icon to switch between Right and Left Button functions.



Exit	Exits the PenMount Monitor function.
------	---

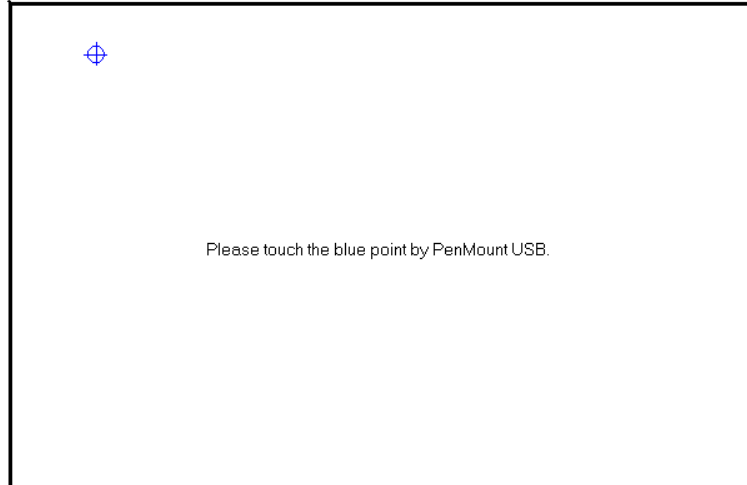
PenMount Rotating Functions

The PenMount driver for Windows Me/2000/XP supports several display rotating software packages. Please see Chapter 5 for more information. The PenMount drivers for Windows 95, Windows 98/Me, Windows 2000/XP, as well as Windows 98 USB and Windows Me/2000/XP support display rotating software packages such as:

- ◎Portrait's Pivot Screen Rotation Software
- ◎ATI Display Driver Rotate Function
- ◎nVidia Display Driver Rotate Function
- ◎SMI Display Driver Rotate Function
- ◎Intel 845G/GE Display Driver Rotate Function

Configuring the Rotate Function

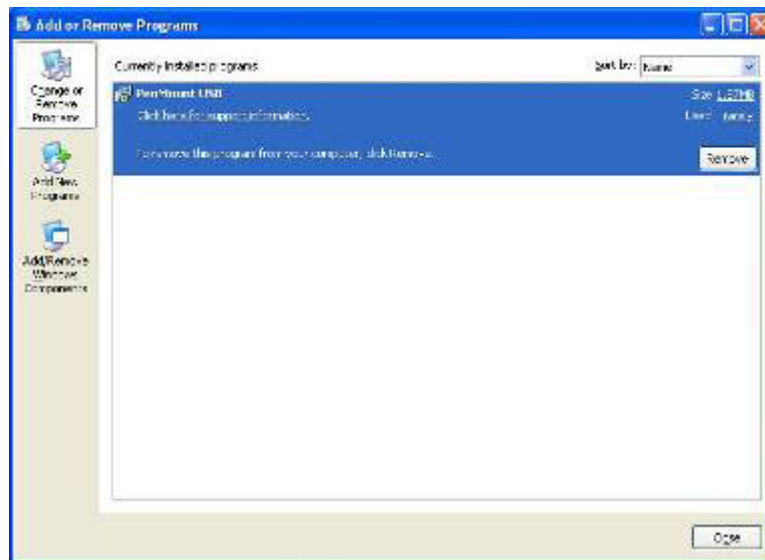
1. Install the rotation software package.
2. Choose the rotate function (0°, 90°, 180°, 270°) in the 3rd party software. The calibration screen appears automatically. Touch this point and rotation is mapped.



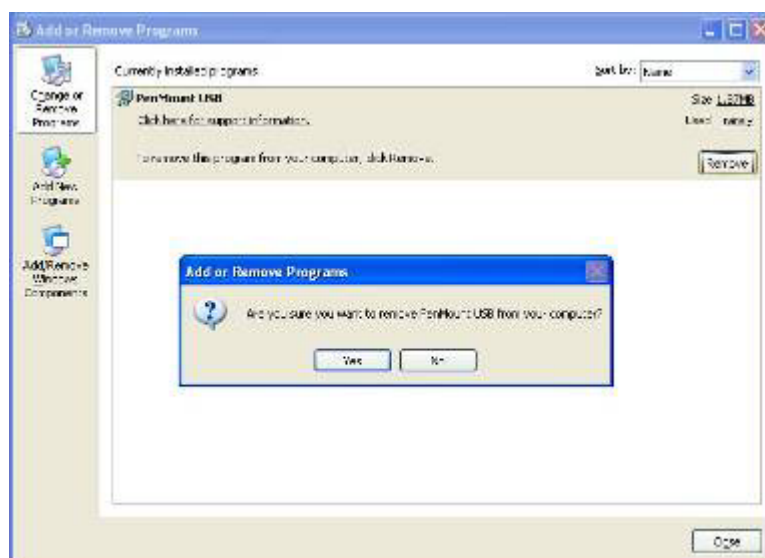
NOTE: The Rotate function is disabled if you use Monitor Mapping.

Uninstall the PenMount Windows Me/2000/XP USB driver

1. Exit the PenMount monitor (PM) in the menu bar.
2. Remove the PenMount USB driver from “Start/Control Panel/Add/Remove Programs. Select ‘PenMount USB’ and click ‘Remove’.



3. Click 'Yes' to confirm removal of the driver and the PenMount Windows 98 USB driver is completely removed from the system.



5.3 Linux X Window USB drivers Version 1.01 for 5000 Boards

(Supports XFree86 version 4.x.x only)

Before installing the Linux X Window 4.x.x driver software, you must have the Linux X Window 4.x.x system installed and running on your computer. You must also have one of the following PenMount USB controller boards installed: 5134 or 51A5. Contents of the PenMount driver folder are listed below.

Driver/penmount_drv.o -- Penmount XFree86 4.X driver
Driver/RedHat7.1/ -- Penmount Linux 2.4 kernel module driver for RedHat 7.1
Driver/RedHat7.2/ -- Penmount Linux 2.4 kernel module driver for RedHat 7.2
Driver/RedHat7.3/ -- Penmount Linux 2.4 kernel module driver for RedHat 7.3
Driver/RedHat8/ -- Penmount Linux 2.4 kernel module driver for RedHat 8
Driver/RedHat9/ -- Penmount Linux 2.4 kernel module driver for RedHat 9
Driver/Module_src -- Penmount Linux 2.4 kernel module driver source code
Calibration/pencal-2.00 -- Penmount calibration utility
Calibration/bcircle.xpm -- bitmap file, for Penmount calibration utility
Calibration/rcircle.xpm -- bitmap file, for Penmount calibration utility
XF86Config.sample -- XF86Config sample
usb.handmap.sample -- usb.handmap sample

NOTE: If "New Hardware Checking" finds a new "USB MOUSE" while booting Linux with the PenMount USB, please click 'Ignore'.

Kernel Driver Module Installation Procedures

1. Login system with "root", and check your XFree86 version
cd /root
2. Copy kernel module "penmountusb.o" to /lib/modules/<kernel version>/kernel/drivers/usb.

****For Redhat 7.1,**

#cp Driver/RedHat7.1/penmountusb.o /lib/modules/2.4.2-2/kernel/drivers/usb
#depmod -a

****For Redhat 7.2,**

#cp Driver/RedHat7.2/penmountusb.o /lib/modules/2.4.7-10/kernel/drivers/usb
#depmod -a

****For Redhat 7.3,**

```
#cp Driver/RedHat7.3/penmountusb.o /lib/modules/2.4.18-3/kernel/drivers/usb
#depmod -a
```

****For Redhat 8,**

```
#cp Driver/RedHat8/penmountusb.o /lib/modules/2.4.18-14/kernel/drivers/usb
#depmod -a
```

****For Redhat 9,**

```
#cp Driver/RedHat9/penmountusb.o /lib/modules/2.4.20-8/kernel/drivers/usb
#depmod -a
```

****For Other Distribution and Other Kernel Version, please rebuild the module source**

```
#cd Driver/Module_src/    (Modify "build" for your "kernel version" first)
#./build

#cp penmountusb.o /lib/modules/2.4.x-x/kernel/drivers/usb (2.4.x-x by your kernel
version)
#depmod -a
```

3. Edit /etc/hotplug/usb.handmap and copy&paste a new line for Penmount USB.
#gedit usb.handmap (or you can use "vi" Text Editor) (Please refer to
usb.handmap.sample)

evdev	0x0003	0x1204	0x9998	0x0000	0x0000	0x00	0x00
	0x00	0x00	0x00	0x00	0x00000000		

4. Add the penmountusb module by executing the following script.

```
#modprobe -r hid
#modprobe -r usbmouse
#modprobe evdev
#modprobe penmountusb
#modprobe hid
```

XFree86 4.0 Driver Module Installation Procedures

1. Copy penmount driver "penmount_drv.o" to "/usr/X11R6/lib/modules/input".
cp Driver/penmount_drv.o /usr/X11R6/lib/modules/input

2. Check your XFree86 Version

```
# cd /etc/X11
```

```
# X -version
```

(If the screen shows "XFree86 Version 4.x.x / X Window System", go to step 3. If not, you can not run the driver.)

You must make sure 4.x.x supports your video card, and then re-link X file.

```
#rm X
```

```
#ln -s /usr/X11R6/bin/XFree86 X
```

```
#mv XF86Config XF86Config.old
```

```
#mv XF86Config-4 XF86Config
```

```
#ln -s XF86Config XF86Config-4
```

3. Edit XF86Config file to load driver. You can refer to "XF86Config.sample".

a. # gedit /etc/X11/XF86Config (or you can use "vi" Text Editor) (Copy & Paste)

b. In the Section "ServerLayout", add a statement :

```
InputDevice      "Penmount" "AlwaysCore"
```

c. Add a Section "InputDevice":

```
Section "InputDevice"
```

```
Identifier "PenMount"
```

```
Driver "penmount"
```

```
Option "Protocol" "Auto"
```

```
Option "Device" "/dev/input/event0"
```

```
Option "PMode" "1"
```

```
Option "MinX" "10"
```

```
Option "MaxX" "1000"
```

```
Option "MinY" "10"
```

```
Option "MaxY" "1000"
```

```
Option "Beep" "1" # 0 = no beep, 1 = beep enabled
```

```
Option "PressVol" "100" # volume of beep (press event)
```

```
Option "PressPitch" "880" # pitch of beep (press event)
```

```
Option "PressDur" "15" # length of beep in 10ms (press event)
```

```
Option "ReleaseVol" "0" # volume of beep (release event)
```

```
Option "ReleasePitch" "1200" # pitch of beep (release event)
```

```
Option "ReleaseDur" "10" # length of beep in 10ms (release event)
```

```
EndSection
```

Calibrating Utilities

1. Copy the calibrate file into the "/usr/local/pencal" directory.
mkdir /usr/local/pencal
cp /mnt/cdrom/Driver/Linux\ XFree86\ 4.x.x\ V2.0/Calibration/*.*
/usr/local/pencal
2. Input "startx" to start X window.
startx
3. In the X window system, open a terminal window and type
cd /usr/local/pencal
./pencal-2.00

A PenCal window appears on the display. Follow the four red points to perform the calibration. When the PenCal window shows: "Finished! Please restart X window," wait a moment until the PenCal window disappears, and then restart the X window system.

4. For more information, type
./pencal-2.00 --help

5.4 Win CE USB Driver Installation for 5000 Boards

Before installing the Win CE driver software, you must have the Win CE system installed and running on your device. You must also have one of the following PenMount USB controller boards installed: 5184, or 51A5.

NOTE 1: Before connecting USB PenMount (ex. to USB), you *must* add the UHCI or OHCI Host Control driver (USB Host) into the platform that is supported by computer.

NOTE 2: Make sure your Win CE cursor is compatible with a USB mouse in the same port.

Driver Installation Procedures

1. mkdir \$(_WINCEROOT)\PUBLIC\PENMOUNT\ReleaseDisk\
Copy All files to this directory.
2. Run Platform Builder menu -> Tools -> CEC Editors
3. In the CEC Editors menu -> File ->
Open \$(_WINCEROOT)\PUBLIC\PENMOUNT\ReleaseDisk\penmount.cec
In the CEC Editors menu -> Catalog -> Add to Catalog
4. Return Platform Builder and Refresh Catalog. In the Catalog Screen you can see the new item named "PenMount Products" to be added to your Catalog.
5. Open the PenMount product folder. Select 'PenMount' and right mouse click to execute 'Add to Platform'.
6. Go to Parameter View and open Project Specific Files folder. Double click on the PROJECT.BIB file

Add the following lines under MODULES:

usbpm.dll	\$(_FLATRELEASEDIR)\usbpm.dll	NK	SH
drawdemo.exe	\$(_FLATRELEASEDIR)\drawdemo.exe		NK
calibrate.exe	\$(_FLATRELEASEDIR)\calibrate.exe	NK	
rbutton.exe	\$(_FLATRELEASEDIR)\rbutton.exe	NK	

Add these lines under FILES:

Calibration.Ink	\$(_FLATRELEASEDIR)\calibration.Ink	NK	SH
DrawDemo.Ink	\$(_FLATRELEASEDIR)\DrawDemo.Ink	NK	SH
RightButton.Ink	\$(_FLATRELEASEDIR)\RightButton.Ink	NK	SH

7. In PROJECT.DAT file in Parameter View of MS WinCE Platform Builder 4.0.

Add these lines:

```
root:-Directory("Windows")
Directory("Windows"):-Directory("LOC_DESKTOP_DIR")
```

```

Directory("\Windows"):-Directory("LOC_PROGRAMS_DIR")
Directory("\Windows\LOC_PROGRAMS_DIR"):-Directory("PenMount TouchPanel")
Directory("\Windows\LOC_DESKTOP_DIR"):-File("Calibration.Ink","\Windows\Calibration.Ink")
Directory("\Windows\LOC_PROGRAMS_DIR\PenMount
TouchPanel"):-File("Calibration.Ink","\Windows\Calibration.Ink")
Directory("\Windows\LOC_PROGRAMS_DIR\PenMount TouchPanel"):-File("Right Button.Ink","\Windows\RightButton.Ink")
Directory("\Windows\LOC_PROGRAMS_DIR\PenMount TouchPanel"):-File("Draw
Demo.Ink","\Windows\DrawDemo.Ink")

```

8. Build your Platform (use "Build Platform", not "Rebuild"), and boot it. Execute Calibration and DrawDemo to test USB PenMount.
9. If you wish to keep the calibration data after WINCE reboots, please write "WINCE REGISTRY" to FLASH in your machine.